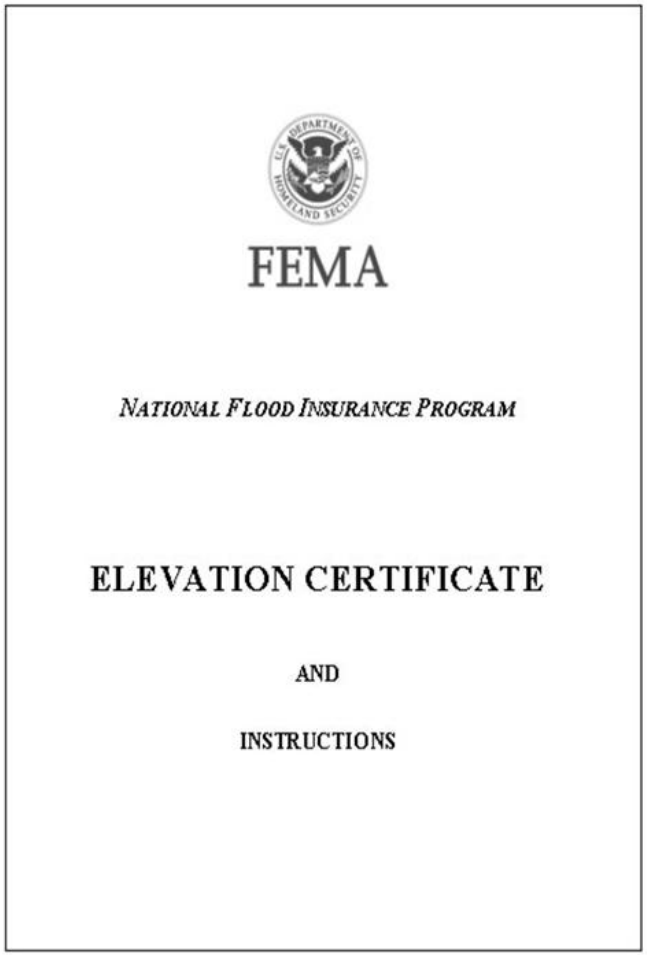
Alabama Association of Floodplain Managers
7th Annual Fall Conference

October 15, 2014

Roy McClure, FEMA, Region 4

FEMA

FEMA Elevation Certificates – Opening and Venting Requirements



FEMA

NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

AND

INSTRUCTIONS

National Flood Insurance Program - NFIP

Participation in the NFIP is based on an agreement between local communities and the Federal Government that states that if a community will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses.

Overview of Community Responsibilities in the NFIP

- **Adopting and enforcing floodplain management regulations that either meet or exceed the minimum standards of the NFIP.**
- **Applying the regulations to all designated special flood hazard areas (SFHAs) throughout its jurisdiction.**
- **Submitting to FEMA the regulations (and subsequent amendments thereto), including copies of related zoning, building, and subdivision regulations; health codes; special purpose ordinances; and other corrective and preventive measures enacted to reduce or prevent flood-related damage.**

Alabama Communities and the NFIP

- Appointing or designating an agency or individual official with the responsibility for the floodplain management program.
- Maintaining a file with specific information on all development that occurs within the mapped flood hazard area, including documentation of certain building elevations and documentation of floodproofing designs, and making this information available for public inspection.
- Conducting periodic field inspections to ensure that ongoing development complies with issued permits and to check for unpermitted development.

Opening and Venting Requirements

- **Under the NFIP, the "lowest floor" is the floor of the lowest enclosed area of a building.** An unfinished or flood-resistant enclosure that is used solely for parking of vehicles, building access, or storage is not the lowest floor, provided the enclosure is built in compliance with applicable requirements (proper opening).
- As used by the NFIP, an "**enclosure" is an area that is enclosed on all sides by walls.**
- The NFIP defines a "basement" as any area that is below-grade on all sides. The regulations do not allow basements to extend below the BFE.

Opening and Venting Requirements (cont)

- **If enclosure walls are not designed with openings to relieve the pressure of standing or slow-moving water against them (called hydrostatic loads), the walls can be damaged or fail during a flood.**
- **If the walls are "load-bearing" walls that support the elevated building, failure of the walls may result in damage to, or collapse of, the building.**
- **To address this concern, the NFIP regulations require that enclosure walls contain openings that will allow for the automatic entry and exit of floodwaters.**
- **These openings allow floodwaters to reach equal levels on both sides of the walls, thereby lessening the potential for damage caused by a difference in hydrostatic loads on opposite sides of the walls.**
- **In A zones, the requirement for flood openings applies to all enclosed areas below new elevated buildings and below substantially improved buildings.**

Opening and Venting Requirements (cont)

The NFIP regulations for enclosures are codified in Title 44 of the Code of Federal Regulations, in Section 60.3(c)(5), which states that a community shall:

"Require, for all new construction and substantial improvements, that fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access, or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria: A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters."

Opening and Venting Requirements (cont)

Definitions

From: 44 CFR 59.1, and the State of Alabama Model Ordinance

"Lowest Floor" means the lowest floor of the lowest enclosed area, including a basement. An unfinished or flood resistant enclosure used solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this Ordinance.

Opening and Venting Requirements (cont)

From: 44 CFR 60.3, and the State of Alabama Model Ordinance

3. Enclosures

All new construction and substantial improvements that include fully enclosed areas formed by foundation and other exterior walls below the lowest floor that are subject to flooding, shall be designed to preclude finished living space and designed to allow for the entry and exit of flood waters to automatically equalize hydrostatic flood forces on exterior walls.

Opening and Venting Requirements (cont)

a) Designs for complying with this requirement must either be certified by a Alabama professional engineer or architect or meet or exceed the following minimum criteria.

1) Provide a minimum of two openings having a total net area of not less than one (1) square inch for every square foot of enclosed area subject to flooding;

2) The bottom of all openings shall be no higher than one (1) foot above the finished grade;

3) Openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic flow of floodwaters in both directions.

Opening and Venting Requirements (cont)

b. The enclosed area shall be the minimum necessary to allow for parking of vehicles, storage or building access.

c. The interior portion of such enclosed area shall not be finished or partitioned into separate rooms in such a way as to impede the movement of floodwaters and all such partitions shall comply with the provisions of Article V, Section B.

Other Opening Requirements
2006 International Residential Code

R408.7 Flood resistance. For buildings located in areas prone to flooding as established in Table R301.2(1):

1. Walls enclosing the under-floor space shall be provided with flood openings in accordance with Section R324.2.2.
2. The finished ground level of the under-floor space shall be equal to or higher than the outside finished ground level.

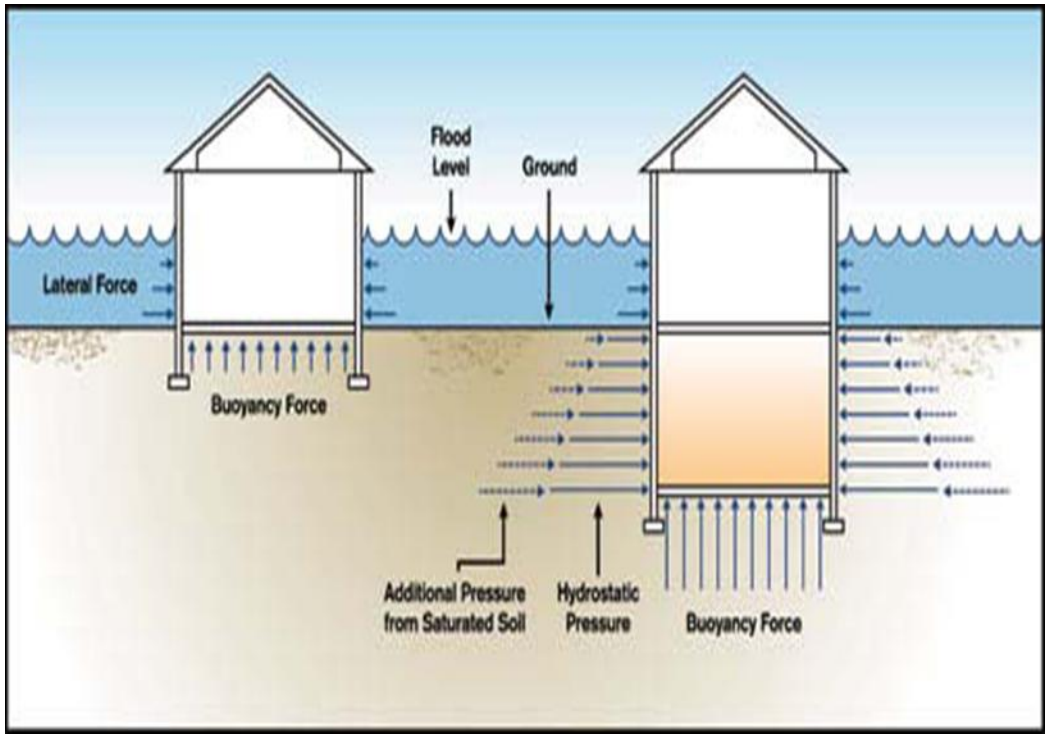
Exception: Under-floor spaces that meet the requirements of FEMA/FIA TB 11-1.

Highlights of ASCE 24 that complement the NFIP minimum requirements include:

- Two alternatives are specified for flood openings to allow for the automatic entry and exit of floodwaters in below-BFE enclosures:
  - **non-engineered openings which do not require certification** (1 sq in per sq ft of enclosed area) and
  - **engineered openings which must be certified by a registered design professional**.

Some of Flood Forces acting on structures

Hydrodynamic Pressure



Hydrostatic Pressure

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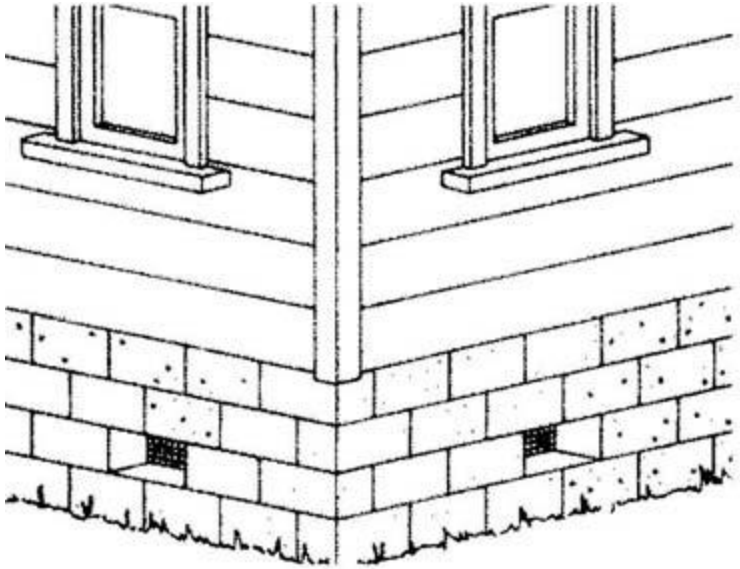
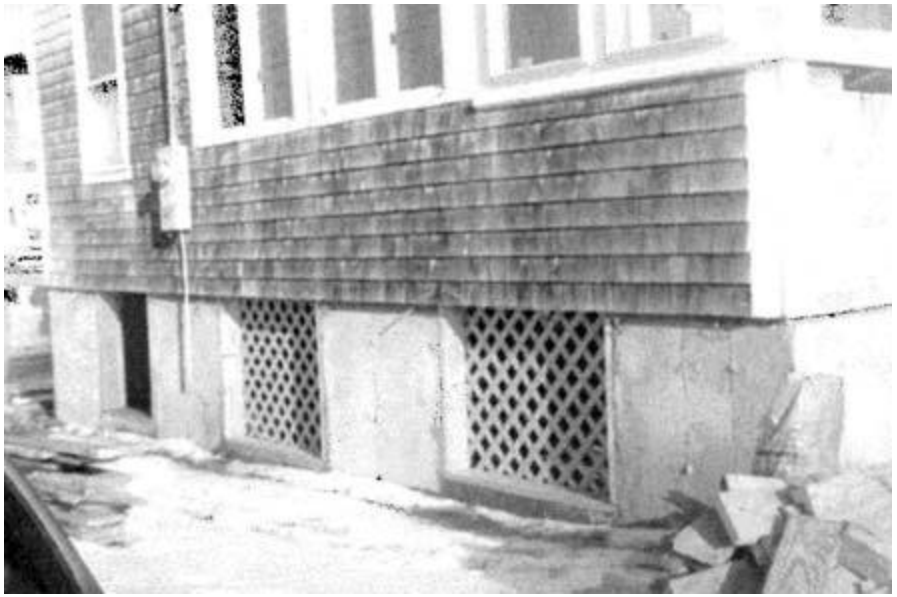
Sample Openings

More Openings





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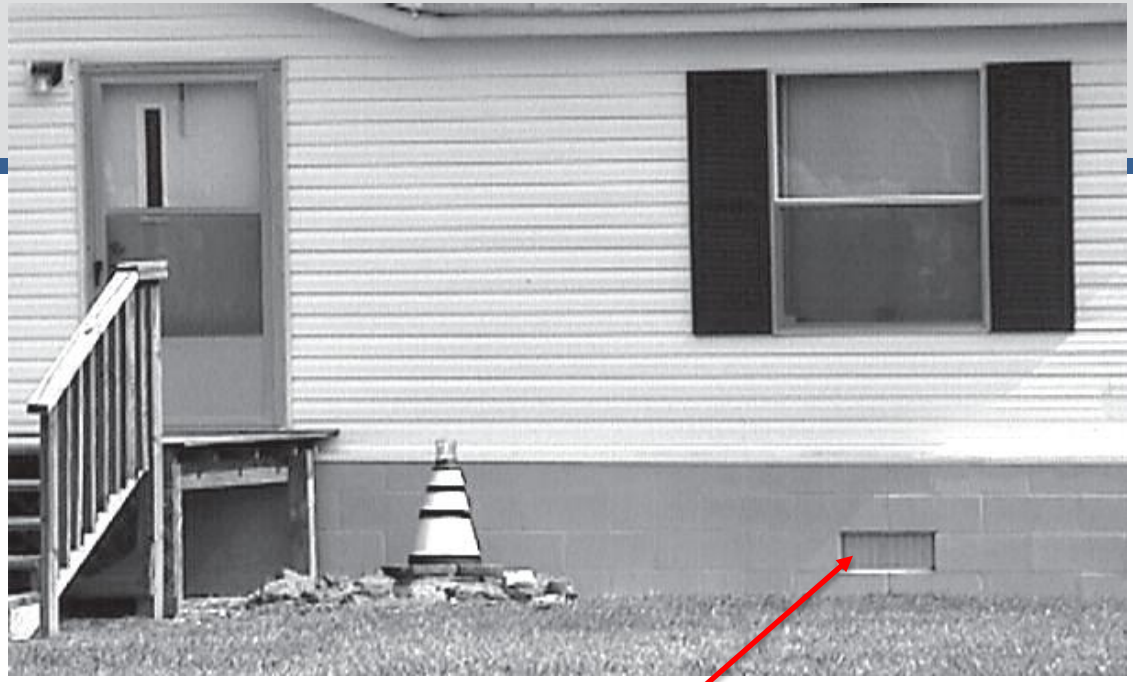
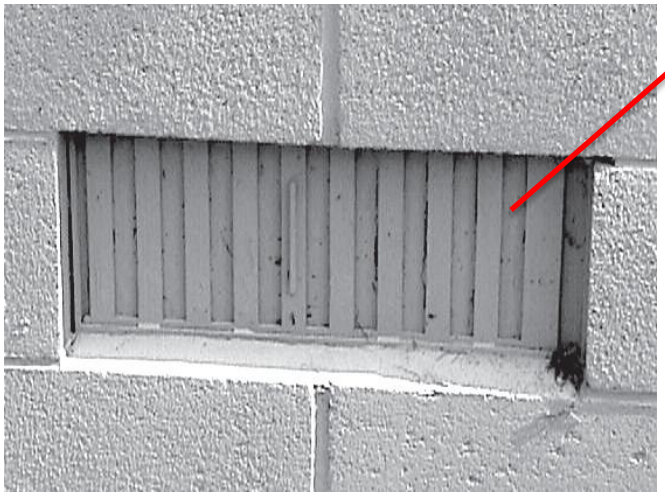
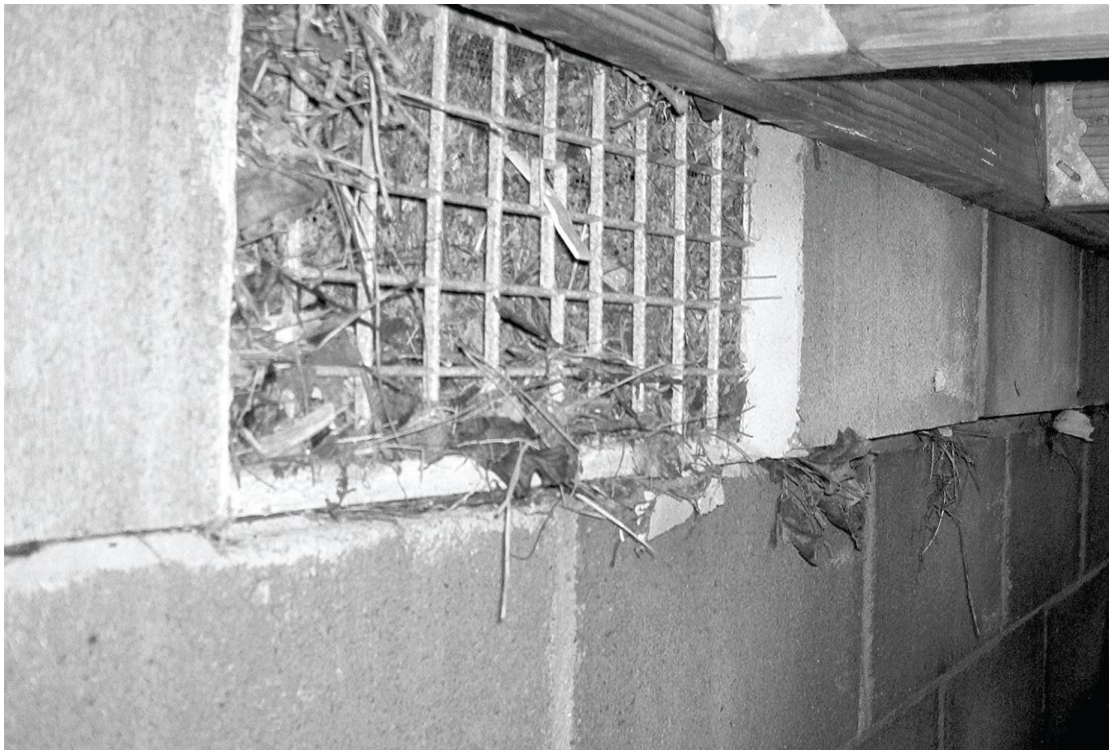




Above Figure. Although this standard air vent was intended as flood openings, it is not acceptable because it is not disabled in the open position and does not allow automatic inflow and outflow of floodwaters.

Typical air vent clogged by flood debris



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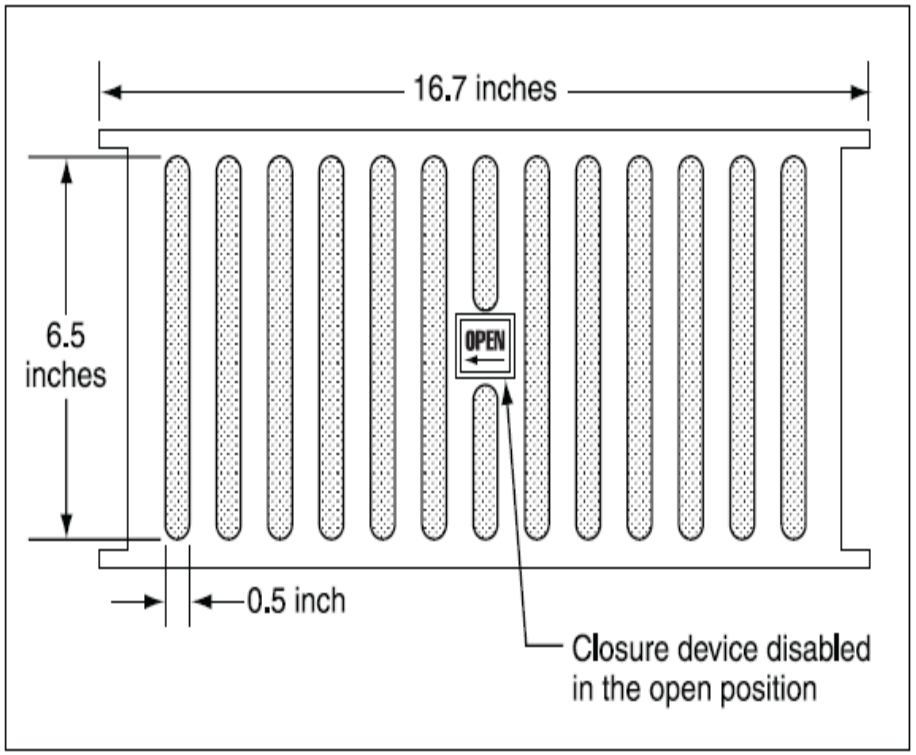
More Openings

Figure 14. Typical standard air vent faceplate (this example provides 42 square inches of net open area)



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Attached garage, with engineered openings installed in the garage door

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More Openings

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Sample Openings
Before/After

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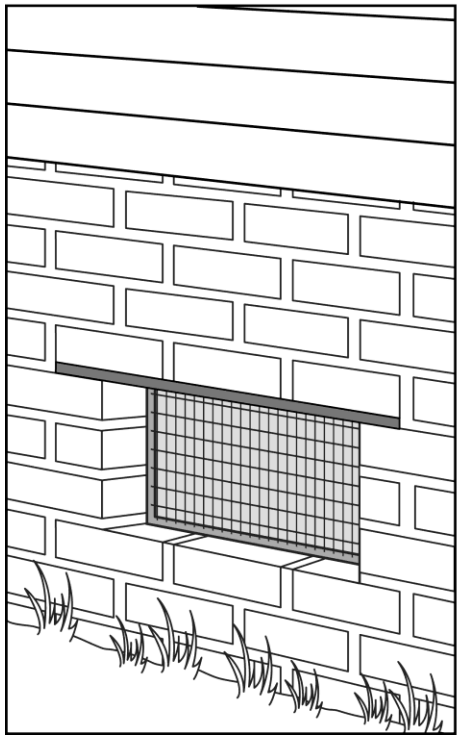
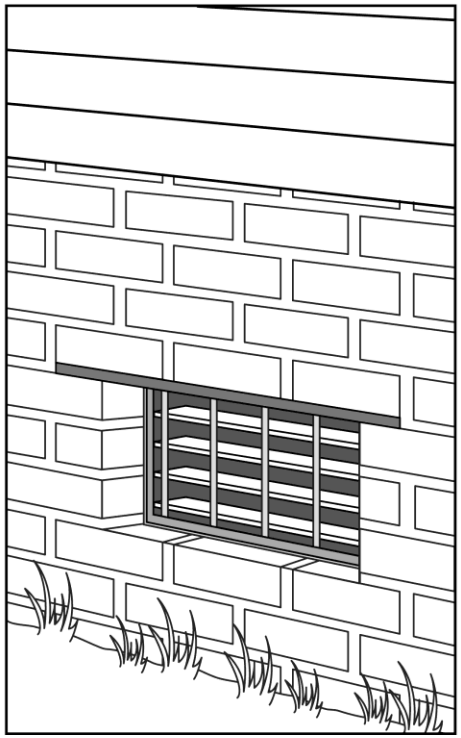
Flood Openings - Covers

Examples of Opening Covers

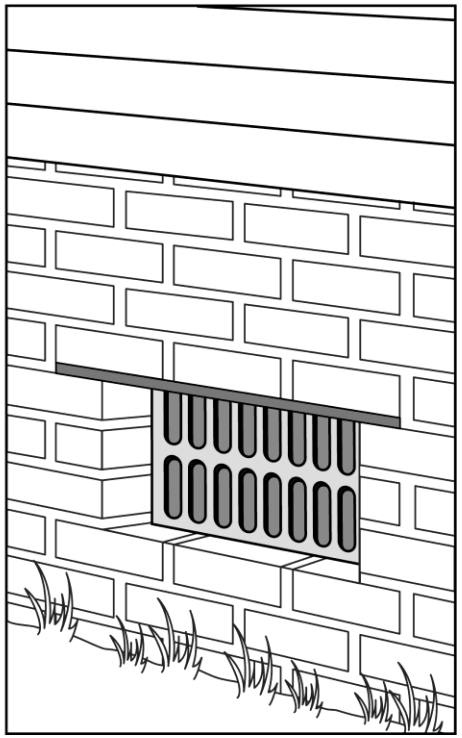
Screening



Louver



Grate



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More Openings

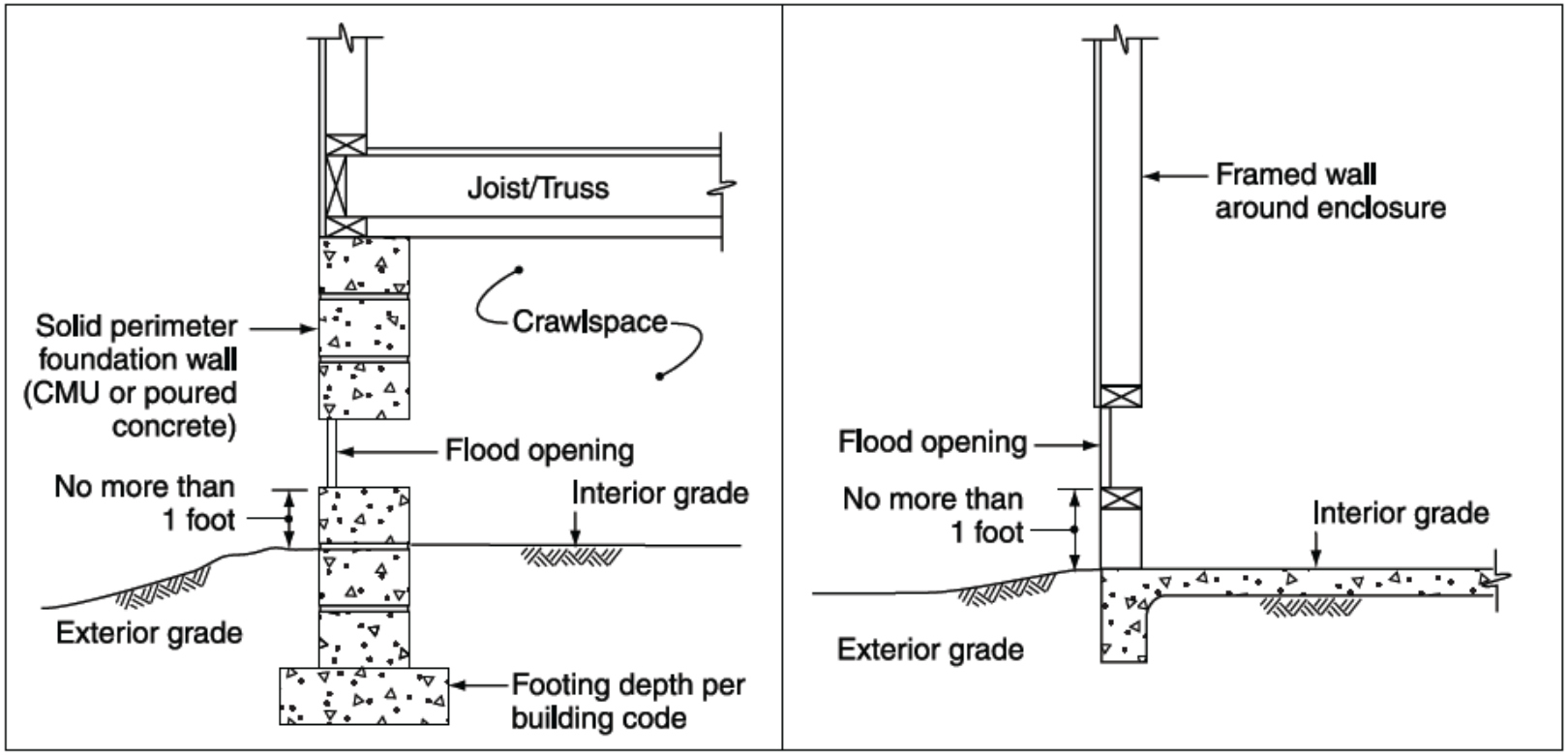

Figure 1. Typical enclosures with flood openings

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More Openings

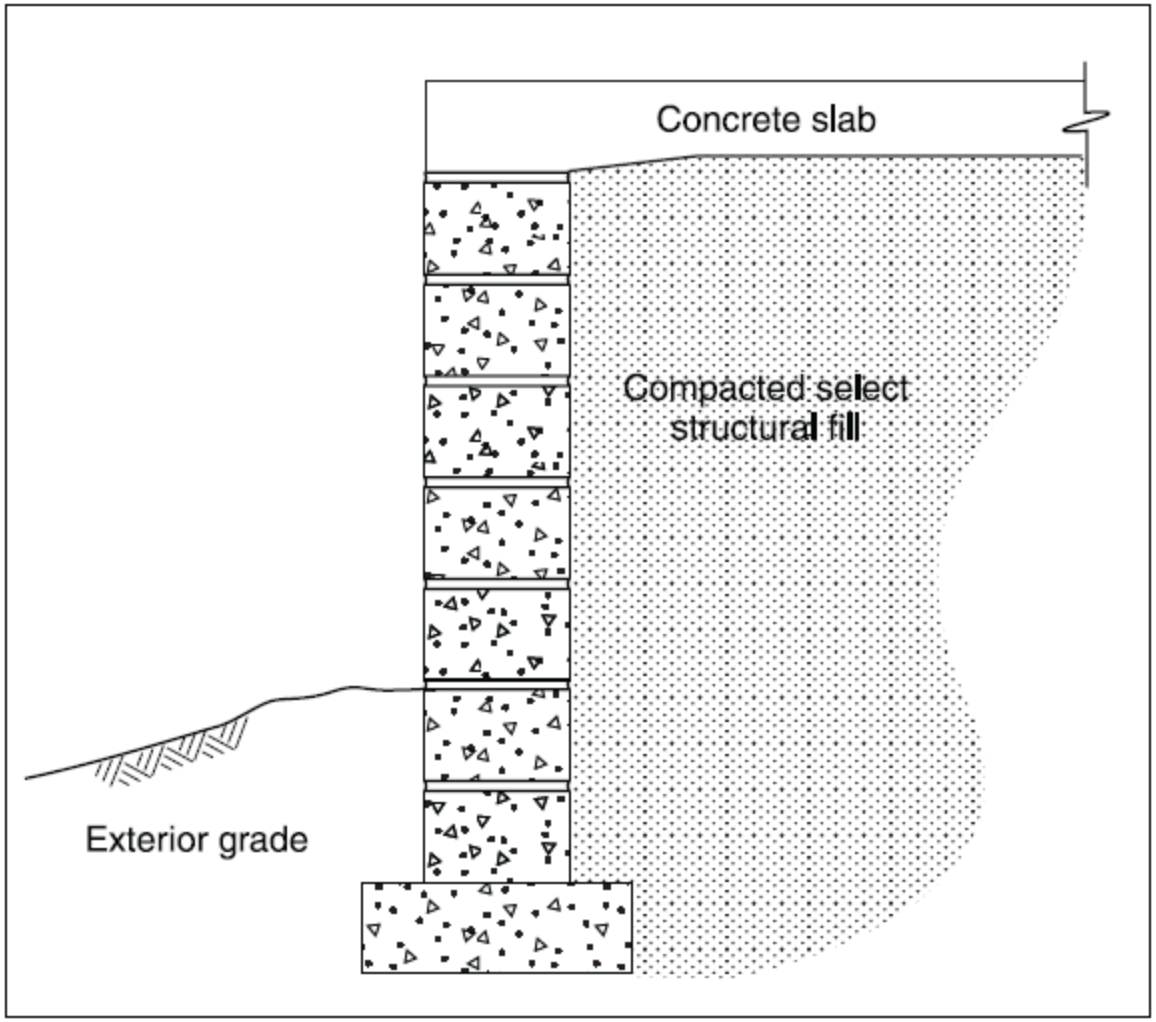

Figure 8. Back-filled stem wall foundation (openings not required)

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More Openings

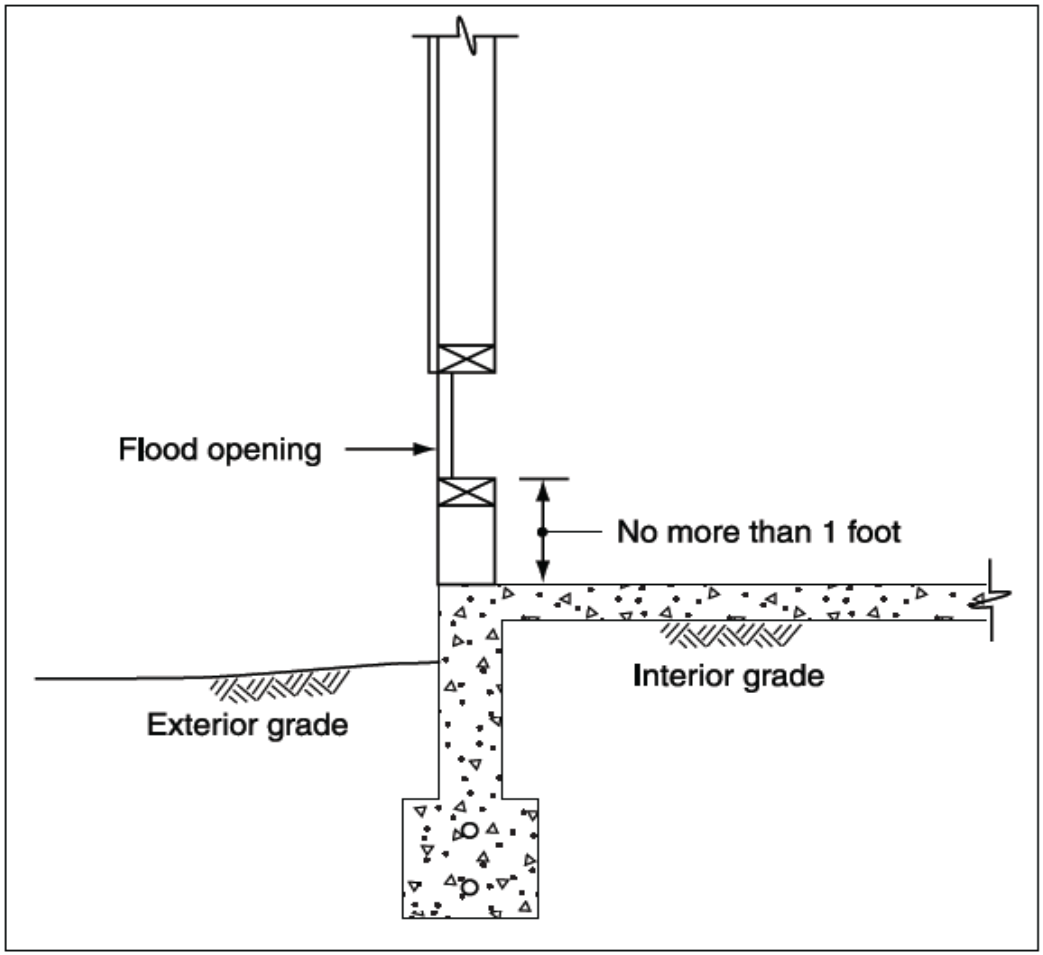
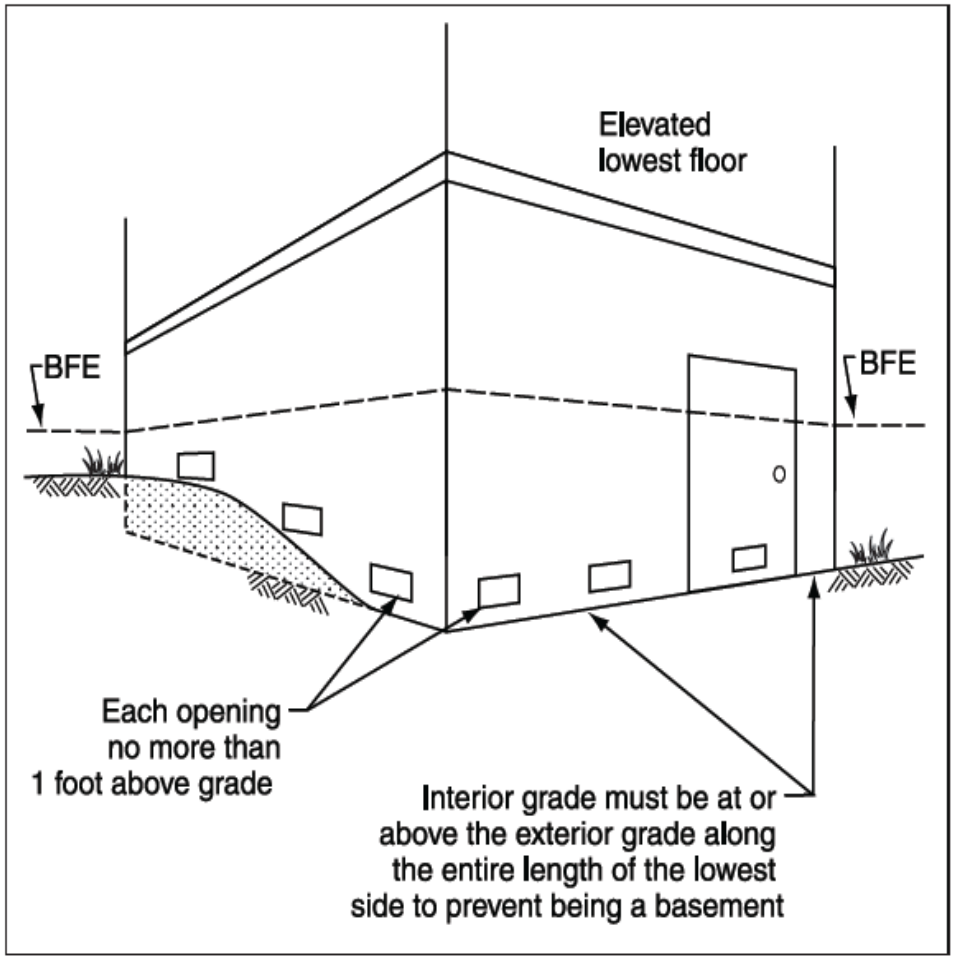


Figure 10. Illustration of flood openings installed within 1 foot of the higher of interior or exterior grade

More Openings

Figure 11. Openings in enclosure walls, sloping site



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Sample Openings

Manufacturers of devices intended for use as standard air vents typically indicate the number of square inches that each device provides for air flow (either stamped into the metal frame or noted on the packaging). The same number should be used for the net open area calculation when these devices are installed as non-engineered openings. However, in order to qualify as flood openings that permit automatic entry and exit of floodwaters, openings must not have solid covers that are installed during cold weather. Similarly, typical air vent devices that are designed to be opened and closed manually must be disabled permanently in the open position.

Insect screens that do not impede the entry and exit of floodwaters are allowed and do not affect the determination of the net open area. Communities that administer the *International Building Code®* (IBC®) or the *International Residential Code®* (IRC®) should note the requirement to cover ventilation openings to keep animals and insects from entering. These codes provide a list of acceptable covering materials. The commentaries that accompany those codes

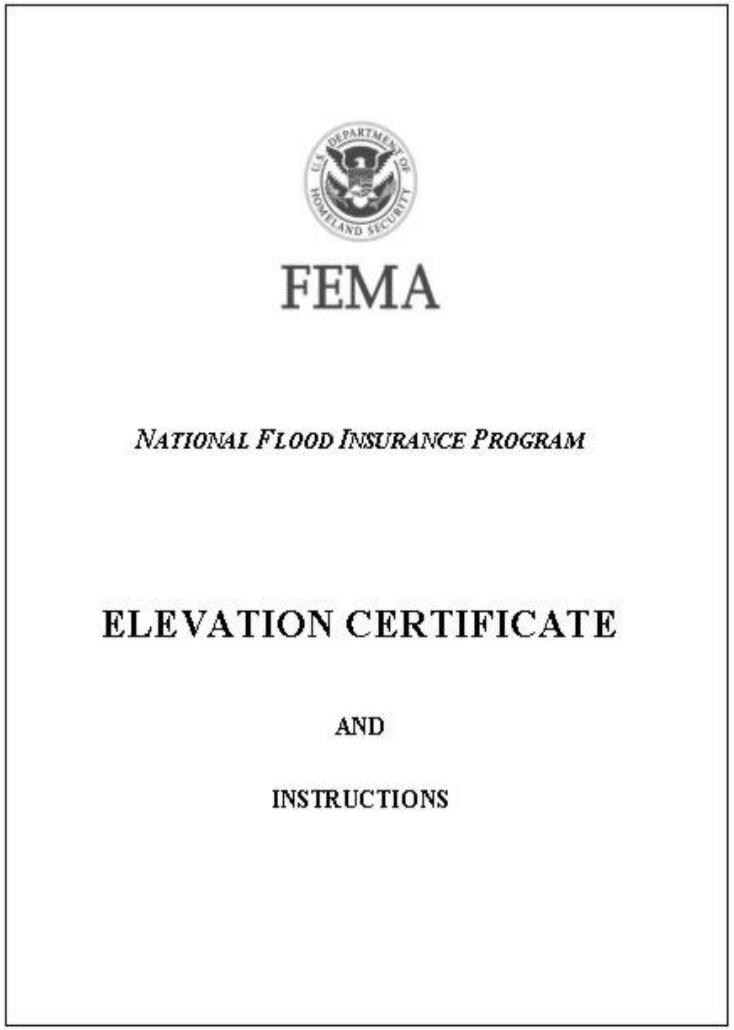
How Openings Affect Flood Insurance Rates

- Compliance influences both the vulnerability to flood damage and the cost of NFIP flood insurance.

- If openings are not compliant, the floor of the crawlspace or the floor of the enclosure becomes the “lowest floor.”

- In those cases, the result may be significantly higher flood insurance premiums, especially if the floor of the crawlspace or enclosure is more than a foot or two below the BFE.

FEMA Elevation Certificate



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NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

AND

INSTRUCTIONS

Uses of the Elevation Certificate

- The Elevation Certificate is an important administrative tool of the National Flood Insurance Program (NFIP), used for:

1) To provide elevation information <u>to ensure compliance</u> with the community's floodplain management regulations.

Some communities have recommendations for structures be elevated to 1 ft above BFE. Some communities even go higher-which equals lower flood insurance premiums.

Uses of the Elevation Certificate

2) To determine the proper insurance premium rate of a structure. (Insurance Rating Purposes)

Rates for insurance are based on lowest floor elevation in relation to BFE, and if elevation is below BFE, indicates to FEMA that a potential violation has occurred.

Determine Policy Premiums

Insurance agents use the elevation information provided on the Elevation Certificate to determine insurance premiums.

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

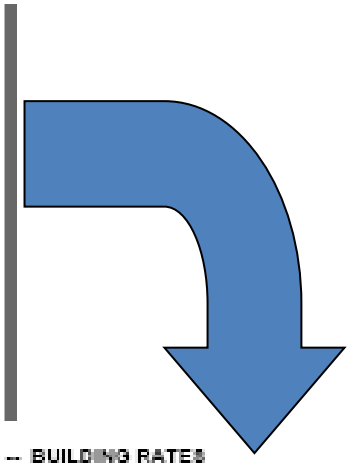
C2. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO. Complete Items C2.a-h below according to the building diagram specified in Item A7. Use the same datum as the BFE.

Benchmark Utilized _____ Vertical Datum _____

Conversion/Comments _____

		Check the measurement used.	
a)	Top of bottom floor (including basement, crawlspace, or enclosure floor) ____.____	☐ feet	☐ meters (Puerto Rico only)
b)	Top of the next higher floor ____.____	☐ feet	☐ meters (Puerto Rico only)
c)	Bottom of the lowest horizontal structural member (V Zones only) ____.____	☐ feet	☐ meters (Puerto Rico only)
d)	Attached garage (top of slab) ____.____	☐ feet	☐ meters (Puerto Rico only)
e)	Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments) ____.____	☐ feet	☐ meters (Puerto Rico only)
f)	Lowest adjacent (finished) grade next to building (LAG) ____.____	☐ feet	☐ meters (Puerto Rico only)
g)	Highest adjacent (finished) grade next to building (HAG) ____.____	☐ feet	☐ meters (Puerto Rico only)
h)	Lowest adjacent grade at lowest elevation of deck or stairs, including structural support ____.____	☐ feet	☐ meters (Puerto Rico only)

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION



FIRM ZONES AE, A1-A30 -- BUILDING RATES

Elevation of Lowest Floor Above or Below BFE[1]	One Floor, No Basement/Encl		More than One Floor, No Basement/Encl		More than One Floor, With Basement/Encl		Manufactured (Mobile) Home[2]	
	1-4 Family	Other Residential & Non-Residential	1-4 Family	Other Residential & Non-Residential	1-4 Family	Other Residential & Non-Residential	Single Family	Non-Residential
+4	.24 / .08	.20 / .08	.24 / .08	.20 / .08	.24/ .08	.20 / .08	.24 / .08	.20 / .08
+3	.24 / .08	.20 / .08	.24 / .08	.20 / .08	.24 / .08	.20 / .08	.25 / .08	.22 / .08
+2	.32 / .08	.26 / .08	.24 / .08	.20 / .08	.24 / .08	.20 / .08	.31 / .08	.25 / .08
+1	.59 / .08	.45 / .10	.38 / .08	.28 / .08	.29 / .08	.22 / .08	.73 / .09	.72 / .08
0	1.08 / .08	.97 / .20	.77 / .08	.59 / .16	.56 / .08	.50 / .16	1.67 / .09	1.62 / .08
-1[3]	2.70 / 1.00	3.85 / 1.35	2.40 / .90	3.00 / .69	1.35 / .52	1.46 / .74	***	***
-2	***	***	***	***	***	***	***	***

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Uses of the Elevation Certificate

3) To support a request for a LOMA or LOMR-F that document that the structure or parcel is above BFE.

- Paper
- eLOMA
- Online LOMC http://www.fema.gov/online-LOMC

New Elevation Certificate & Changes

- The new EC has an expiration date of July 31, 2015.
- Go to FEMA Library or Search Engine and search Elevation Certificate. Provides link to new EC – Word Document and PDF form (fillable).
- New EC mandatory August 1, 2013

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Importance of Openings vs Flood Insurance

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U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1-9.

OMB No. 1660-0008
Expires March 31, 2012

SECTION A - PROPERTY INFORMATION

For Insurance Company Use:

A1. Building Owner's Name — Policy Number

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. — Company NAIC Number

City State ZIP Code

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) _____

A5. Latitude/Longitude: Lat. _____ Long. _____ Horizontal Datum: ☐ NAD 1927 ☐ NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number_____

A8. For a building with a crawlspace or enclosure(s):
- a) Square footage of crawlspace or enclosure(s) 2000 sq ft
- b) No. of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade _____
- c) Total net area of flood openings in A8.b 2000 sq in
- d) Engineered flood openings? ☐ Yes ☐ No

A9. For a building with an attached garage:
- a) Square footage of attached garage _____ sq ft
- b) No. of permanent flood openings in the attached garage within 1.0 foot above adjacent grade _____
- c) Total net area of flood openings in A9.b _____ sq in
- d) Engineered flood openings? ☐ Yes ☐ No

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: _____ Vertical Datum: _____

Indicate elevation datum used for the elevations in items a) through h) below. ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other/Source: _____

Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	_____ . _____		s
b) Top of the next higher floor	_____ . _____	☐ feet	☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	_____ . _____	☐ feet	☐ meters
d) Attached garage (top of slab)	_____ . _____	☐ feet	☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	_____ . _____	☐ feet	☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	_____ . _____	☐ feet	☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	_____ . _____	☐ feet	☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	_____ . _____	☐ feet	☐ meters

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SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO. Complete Items C2.a-g below according to the building diagram specified in Item A7.

Benchmark Utilized _____ Vertical Datum _____

Conversion/Comments _____

		Check the measurement used.	
a)	Top of bottom floor (including basement, crawl space, or enclosure floor)		ers (Puerto Rico only)
b)	Top of the next higher floor	☐ feet	☐ meters (Puerto Rico only)
c)	Bottom of the lowest horizontal structural member (V Zones only)	☐ feet	☐ meters (Puerto Rico only)
d)	Attached garage (top of slab)	☐ feet	☐ meters (Puerto Rico only)
e)	Lowest elevation of machinery or equipment servicing the building (Describe type of equipment in Comments)	☐ feet	☐ meters (Puerto Rico only)
f)	Lowest adjacent (finished) grade (LAG)	☐ feet	☐ meters (Puerto Rico only)
g)	Highest adjacent (finished) grade (HAG)	☐ feet	☐ meters (Puerto Rico only)

Distinguishing Feature – For all zones, the area below the first floor is enclosed by solid or partial perimeter walls. In all A zones, the crawlspace is with or without openings** present in the walls of the crawlspace. Indicate information about crawlspace size and openings in Section A – Property Information.

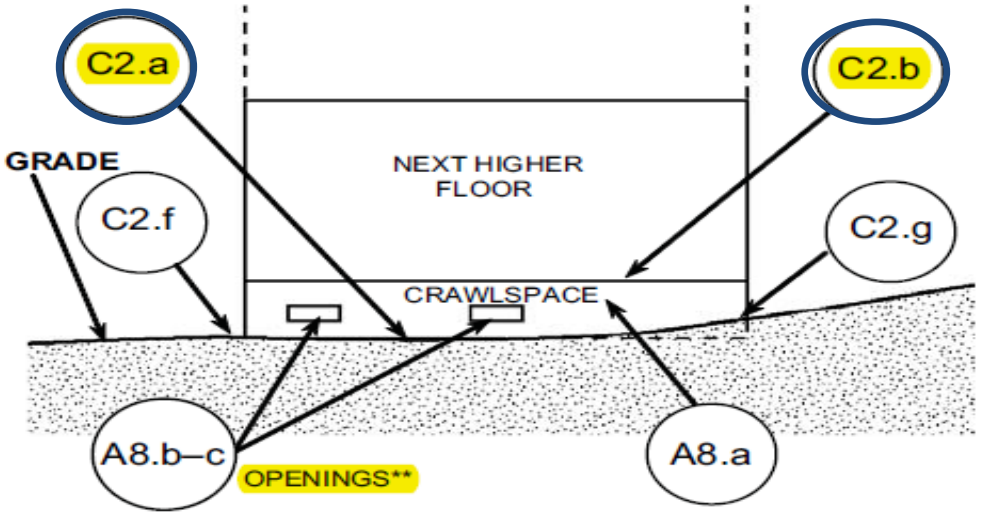

Diagram 8

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Flood Insurance Rating

TABLE 3B. REGULAR PROGRAM – POST-FIRM CONSTRUCTION RATES

ANNUAL RATES PER $100 OF COVERAGE

(Basic/Additional)

FIRM ZONES AE, A1-A30 – BUILDING RATES

ELEVATION OF LOWEST FLOOR ABOVE OR BELOW THE BFE[1, 2]	1 FLOOR No Basement/Enclosure/ Crawlspace[3, 4]		MORE THAN 1 FLOOR No Basement/Enclosure/ Crawlspace[3, 4]		MORE THAN 1 FLOOR With Basement/Enclosure/ Crawlspace[3, 4]		MANUFACTURED (MOBILE) HOME[5]	
	1-4 Family	Other Residential & Non-Residential	1-4 Family	Other Residential & Non-Residential	1-4 Family	Other Residential & Non-Residential	Single Family	Non-Residential
+4	.24 / .08	.20 / .08	.24 / .08	.20 / .08	.24/ .08	.20 / .08	.28 / .12	.26 / .12
+3	.30 / .08	.26 / .10	.25 / .08	.22 / .08	.27 / .08	.23 / .09	.34 / .12	.30 / .12
+2	.42 / .08		.32 / .08	.28 / .08	.32 / .08	.27 / .09	.50 / .12	.47 / .13
+1	.71 / .10	.61 / .15	.57 / .09	.40 / .10	.43 / .09	.33 / .11	.89 / .16	.87 / .18
0	1.78 / .13	1.60 / .25	1.34 / .12	1.09 / .17	.98 / .10	.86 / .17	2.30 / .22	2.25 / .28
-1	4.40 / .97	4.85 / 1.03	3.33 / .72	3.42 / .45	2.24 / .45	1.94 / .52	***	***
-2	***	***	***	***	***	***	***	***

OCTOBER 1, 2012

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Rate Comparisons

Pre or Post FIRM[1]	Dwelling Type & # of Floors	Amount of Coverage Build/Content (in thousands)	Deductible Build/Content	Flood Zone	Elevation Difference of Lowest Floor and BFE (Feet)	Cost of Flood Insurance* (per year)
Pre	Single Family/ One Floor No Basement	$200/$80	$2,000/$2,000	A1-30, AE, AO, AH, A	Not Needed (Pre-FIRM)	Primary (>80%) $2,643 Non-Primary $2,956
Pre- or Post	Single Family/ One Floor No Basement	$200/$80	$1,000/$1,000	B, C or X	Not Needed	$1,584 Standard Flood Ins. Policy
Pre- or Post	Single Family/ One Floor No Basement	$200/$80	$1,000/$1,000	B, C or X	Not Needed	$388 Preferred Risk Policy (***Eligibility Requirements****)
Post	Single Family/ One Floor No Basement	$200/$80	$1,000/$1,000	A1-30, AE	+4	$462
					+3	$498
					+2	$570
					+1	$810
					At BFE	$1,636
					-1 Below	$5,042
					-2 or more	Submit for Rate

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Elevation lowers premiums

"ZONE A" EXAMPLE

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Common Errors found on EC

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Section A Property Information

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1-9.

OMB No. 1660-0008
Expires March 31, 2012

SECTION A - PROPERTY INFORMATION | For Insurance Company Use:

A1. Building Owner's Name | Policy Number

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. | Company NAIC Number

City State ZIP Code

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) _____

A5. Latitude/Longitude: Lat. _____ Long. _____ Horizontal Datum: ☐ NAD 1927 ☐ NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number_____

A8. For a building with a crawlspace or enclosure(s):
- a) Square footage of crawlspace or enclosure(s) _____ sq ft
- b) No. of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade _____
- c) Total net area of flood openings in A8.b _____ sq in
- d) Engineered flood openings? ☐ Yes ☐ No

A9. For a building with an attached garage:
- a) Square footage of attached garage _____ sq ft
- b) No. of permanent flood openings in the attached garage within 1.0 foot above adjacent grade _____
- c) Total net area of flood openings in A9.b _____ sq in
- d) Engineered flood openings? ☐ Yes ☐ No

- Property description – which structure
- Latitude/Longitude - Mandatory – must include directional info - within 66 feet
- Horizontal datum (NAD)
  - NAD = North American Datum
- Photographs – A6 – 3x3, dated 90 days,

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Section A

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1-9.

OMB No. 1660-0008
Expires March 31, 2012

SECTION A - PROPERTY INFORMATION

For Insurance Company Use:

A1. Building Owner's Name — Policy Number

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. — Company NAIC Number

City State ZIP Code

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) _____

A5. Latitude/Longitude: Lat. _____ Long. _____ Horizontal Datum: ☐ NAD 1927 ☐ NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number_____

A8. For a building with a crawlspace or enclosure(s):
- a) Square footage of crawlspace or enclosure(s) _____ sq ft
- b) No. of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade _____
- c) Total net area of flood openings in A8.b _____ sq in
- d) Engineered flood openings? ☐ Yes ☐ No

A9. For a building with an attached garage:
- a) Square footage of attached garage _____ sq ft
- b) No. of permanent flood openings in the attached garage within 1.0 foot above adjacent grade _____
- c) Total net area of flood openings in A9.b _____ sq in
- d) Engineered flood openings? ☐ Yes ☐ No

- A7 - Building diagram number –missing/wrong; compare # to zone - #2 or 4 Post-FIRM = compliance issue;
- A8 - Measurements of crawl spaces, enclosures, attached garages, and flood openings – Key C2A and C2B
- A8 d) Engineered Opening Cert not attached

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Section B

FIRM panel information recorded in this section

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use base flood depth)

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9.
☐ FIS Profile ☐ FIRM ☐ Community Determined ☐ Other (Describe) _____

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other (Describe) _____

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☐ No
Designation Date _____ ☐ CBRS ☐ OPA

- Wrong CID
- Incorrect Map Panel, Suffix, FIRM date

FEMA

Section B
FIRM panel information recorded in this section

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use base flood depth)

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9.
☐ FIS Profile ☐ FIRM ☐ Community Determined ☐ Other (Describe) _____

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other (Describe) _____

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☐ No
Designation Date _____ ☐ CBRS ☐ OPA

- Zone not for structure only –
- Should show more restrictive zone when structure falls in two zones

FEMA

Section B

FIRM panel information recorded in this section

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use base flood depth)

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9.
☐ FIS Profile ☐ FIRM ☐ Community Determined ☐ Other (Describe) _____

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other (Describe) _____

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☐ No
Designation Date _____ ☐ CBRS ☐ OPA

- Datum conversion not identified or explained in Comments

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Section C - Official survey required

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: _____ Vertical Datum: _____

Indicate elevation datum used for the elevations in items a) through h) below. ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other/Source: _____
Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	_____ . _____	☐ feet	☐ meters
b) Top of the next higher floor	_____ . _____	☐ feet	☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	_____ . _____	☐ feet	☐ meters
d) Attached garage (top of slab)	_____ . _____	☐ feet	☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	_____ . _____	☐ feet	☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	_____ . _____	☐ feet	☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	_____ . _____	☐ feet	☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	_____ . _____	☐ feet	☐ meters

- C1. **Elevations Based on**
  - Construction Drawings
  - Building Under Construction
  - Finished EC
- Empty lines – should show N/A

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Section C C.2 Elevations

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: _____ Vertical Datum: _____

Indicate elevation datum used for the elevations in items a) through h) below. ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other/Source: _____
Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	_____ . _____	☐ feet	☐ meters
b) Top of the next higher floor	_____ . _____	☐ feet	☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	_____ . _____	☐ feet	☐ meters
d) Attached garage (top of slab)	_____ . _____	☐ feet	☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	_____ . _____	☐ feet	☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	_____ . _____	☐ feet	☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	_____ . _____	☐ feet	☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	_____ . _____	☐ feet	☐ meters

- Provide National Geodetic Survey Permanent Identifier (PID) or other unique identifier for the *Benchmark Utilized* field.

Section D Official certification required

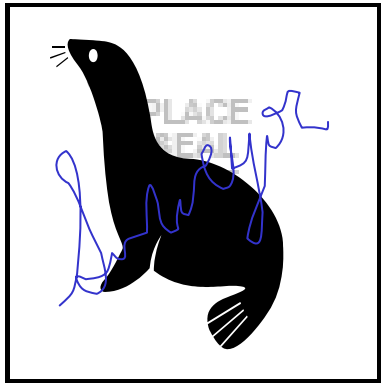
structural support

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. *I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.*

☐ Check here if comments are provided on back of form.

Were latitude and longitude in Section A provided by a licensed land surveyor? ☐ Yes ☐ No



Certifier's Name		License Number	
Title	Company Name		
Address	City	State	ZIP Code
Signature	Date	Telephone	

FEMA Form 81-31, Mar 09 — See reverse side for continuation. — Replaces all previous editions

- Seal Not signed and dated

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Section D Comments

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

Copy both sides of this Elevation Certificate for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments There is also a higher floor that is at an elevation of 15.10 feet(NGVD 1929) and a electric meter box at an elevation of 18.58 feet(NGVD 1929). The purpose of this elevation certificate is not for obtaining flood insurance,only for informational purposes for the Building Department. The lowest elevation of machinery or equipment C2 (e) is an air compressor pad.

Signature

Date 09 20 2012

- Datum Conversion not given
- Information on M&E not provided
- Comments Section not utilized

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Section E — Primarily for AO and A zones *without* BFE

SECTION E - BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zones AO and A (without BFE), complete Items E1-E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1-E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.

E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).
a) Top of bottom floor (including basement, crawl space, or enclosure) is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.
b) Top of bottom floor (including basement, crawl space, or enclosure) is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the LAG.

E2. For Building Diagrams 6-8 with permanent flood openings provided in Section A Items 8 and/or 9 (see page 8 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E3. Attached garage (top of slab) is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E4. Top of platform of machinery and/or equipment servicing the building is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown. The local official must certify this information in Section G.

- Complete this section if the building is located in Zone AO or Zone A (without BFE). Otherwise, complete Section C.

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Section G
Community Information

SECTION G - COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8. and G9.

G1. ☐ The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. ☐ The following information (Items G4.-G9.) is provided for community floodplain management purposes.

G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate Of Compliance/Occupancy Issued

G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building: _____._____ ☐ feet ☐ meters (PR) Datum_____

G9. BFE or (in Zone AO) depth of flooding at the building site: _____._____ ☐ feet ☐ meters (PR) Datum_____

Local Official's Name	Title
Community Name	Telephone
Signature	Date
Comments	

☐ Check here if attachments

- Community officials can transfer information from a previously certified document.
- They should not use this section to correct errors that should be corrected by surveyor.

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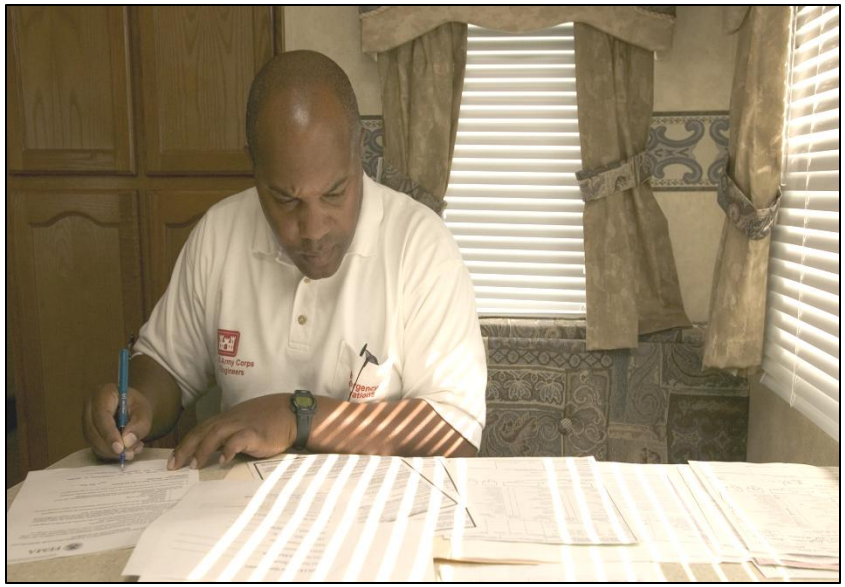
Who certifies building elevations?



- In order for flood insurance to be rated properly, a licensed land surveyor, engineer, or architect or
- Community officials who are authorized by law or ordinance to provide floodplain management information

Common Mistakes/Errors

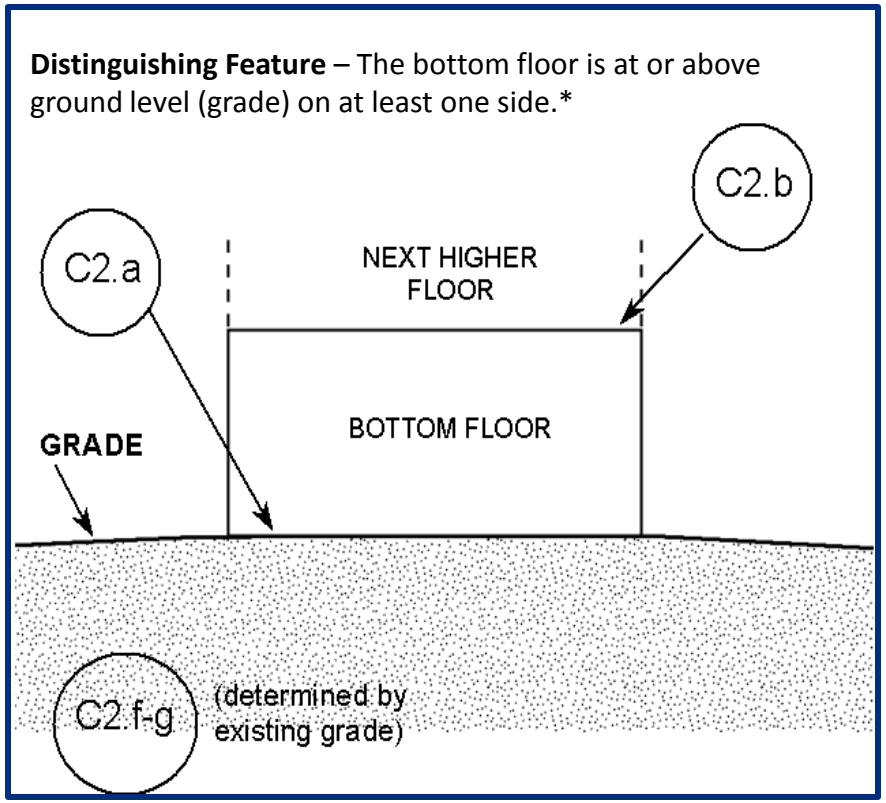
- Community accepting EC without reviewing for completeness or marked Under Construction when structure is complete.
- No M&E indicates in Section C for Finished Construction..
- Writing on EC – invalidates the EC if anyone other than surveyor makes a change and initials.
- Not returning EC to Surveyor for corrections.

Building Diagrams

Page 7, 8 or 9 of the Elevation Certificate Instructions

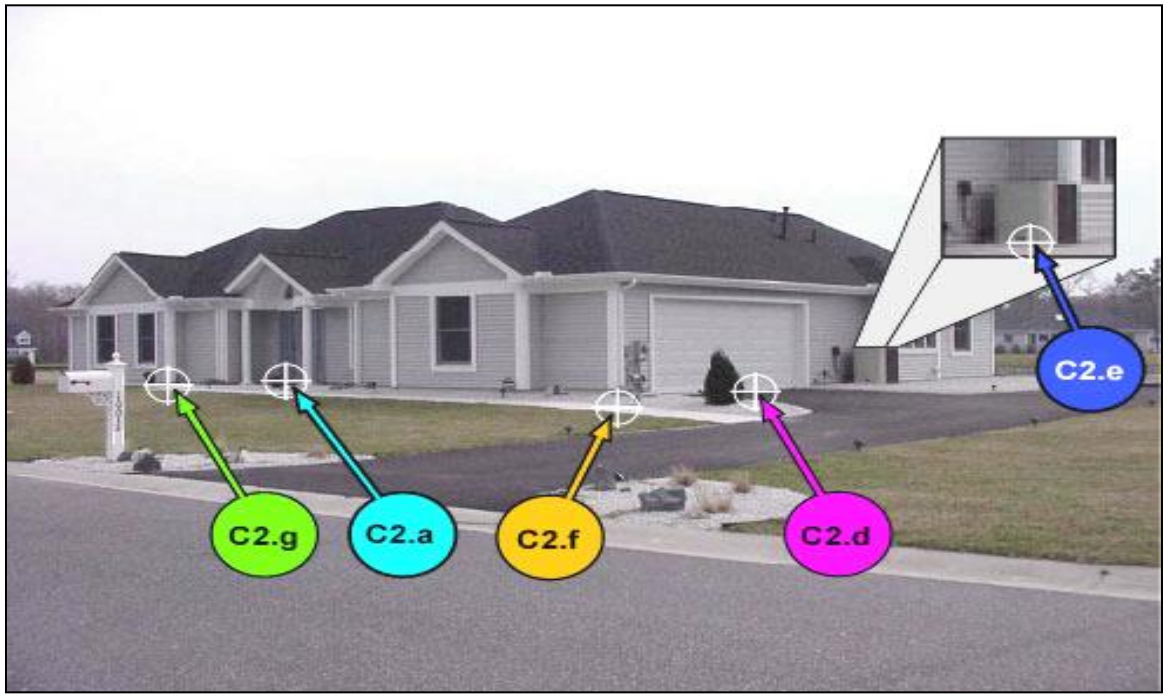
- Following are examples of the 10 diagrams that illustrate various types of buildings.

Diagram 1A



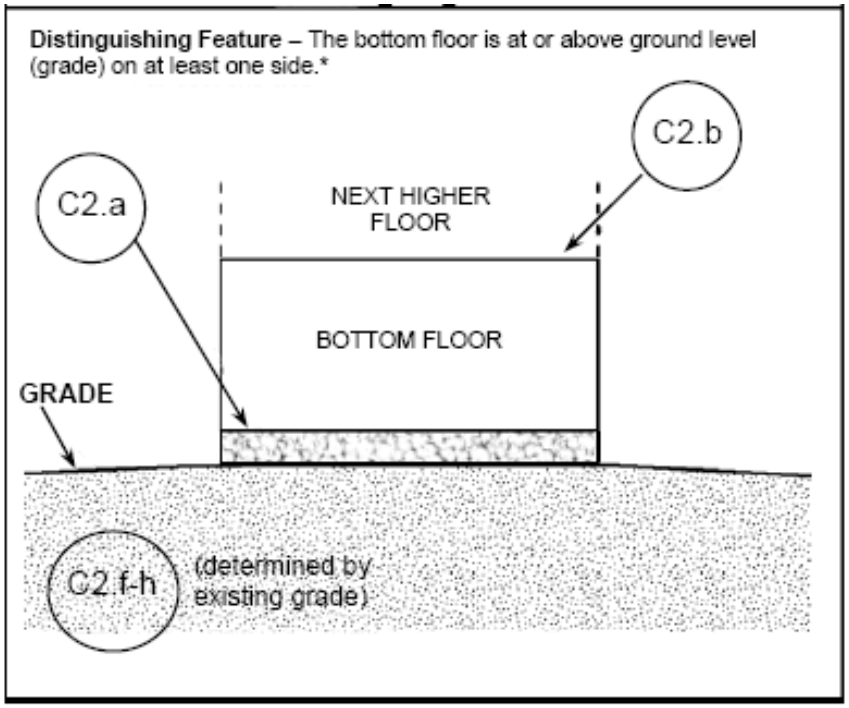
- All slab-on-grade single and multiple-floor buildings (other than split level) and high-rise buildings, either detached or row type (e.g. townhouse); with or without an attached garage.

Slab-on-grade, one-story building with attached garage



Slab-on-grade, multiple-floor townhouse without attached garage

Diagram 1B



- All raised-slab-on-grade or slab-on-stem wall with fill, single- or multiple-floor buildings (other than split-level), either detached or row type (e.g., townhouse); with or without attached garage.

Slab on back-filled stem wall

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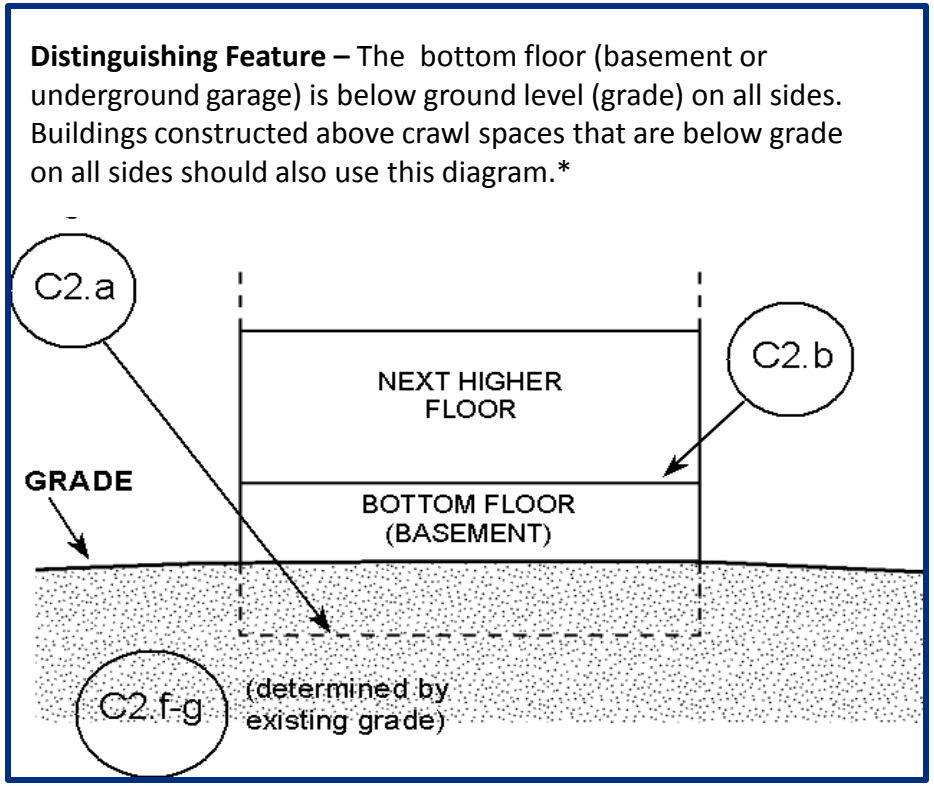
Diagram 2



- All single-and multiple-floor buildings with basement, either detached or row type (e.g., townhouses); with or without attached garage.

Multiple-floor building with basement, without attached garage

Multi-floor building with basement, without attached garage

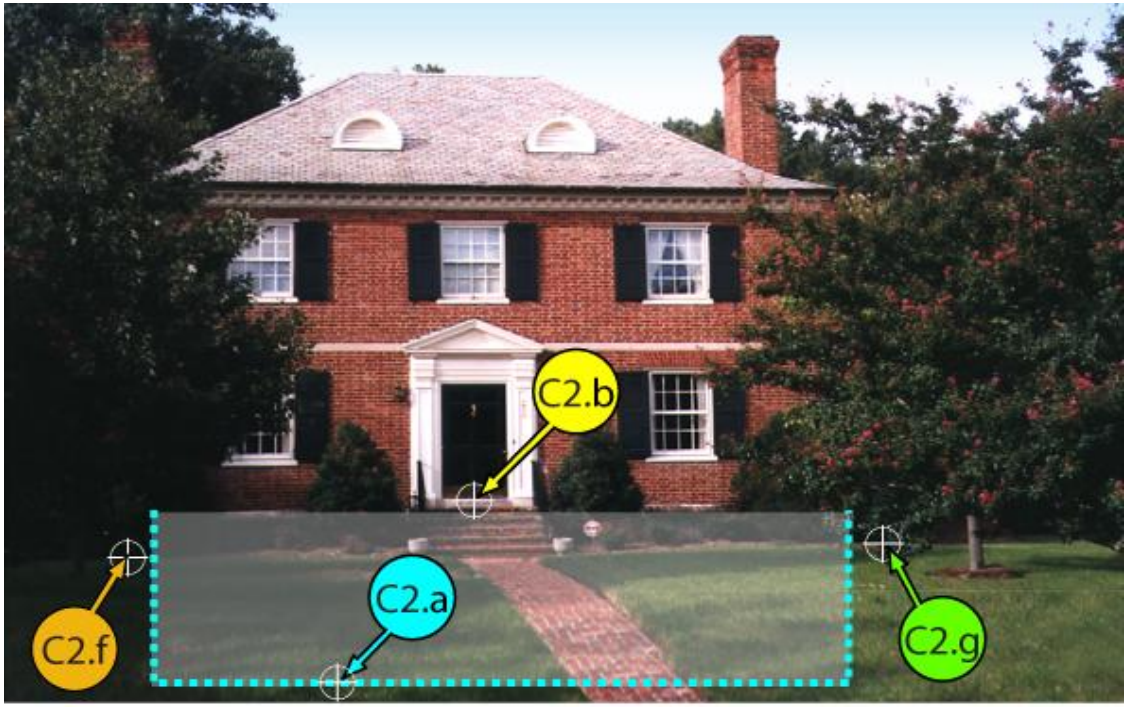
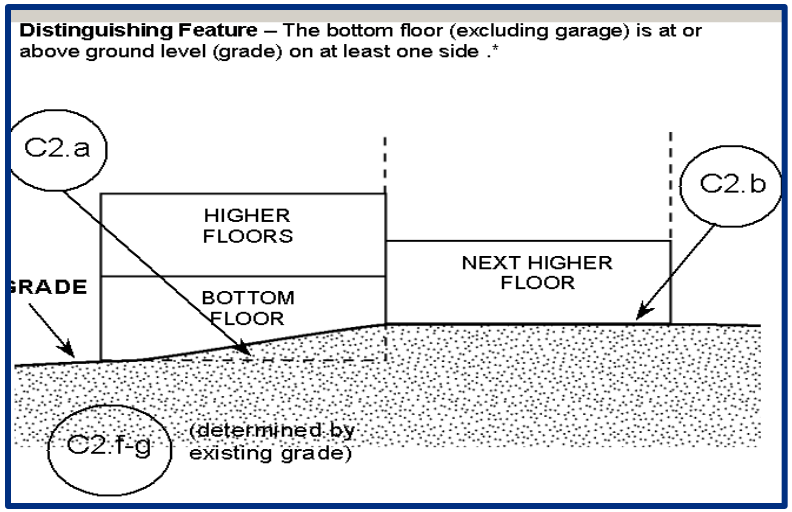


Diagram 3

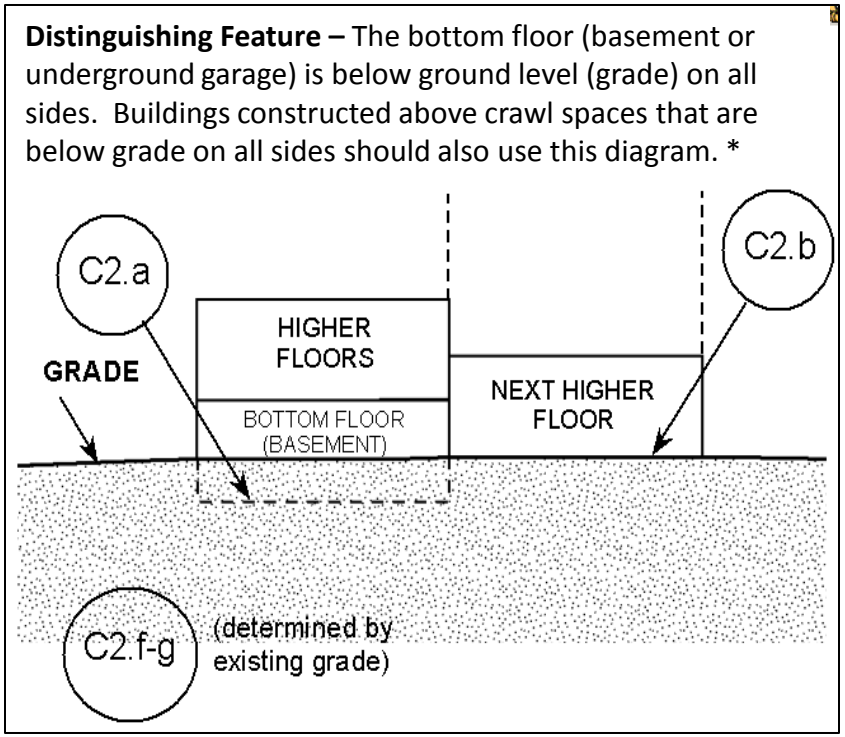
Distinguishing Feature – The bottom floor (excluding garage) is at or above ground level (grade) on at least one side .*



- All split-level buildings that are slab-on-grade, either detached or row type (e.g., townhouses); with or without attached garage.

Slab-on-grade, split-level building without attached garage

Diagram 4



- All split-level buildings (other than slab-on-grade), either detached or row type (e.g., townhouses); with or without attached garage.

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Split-level building without attached garage

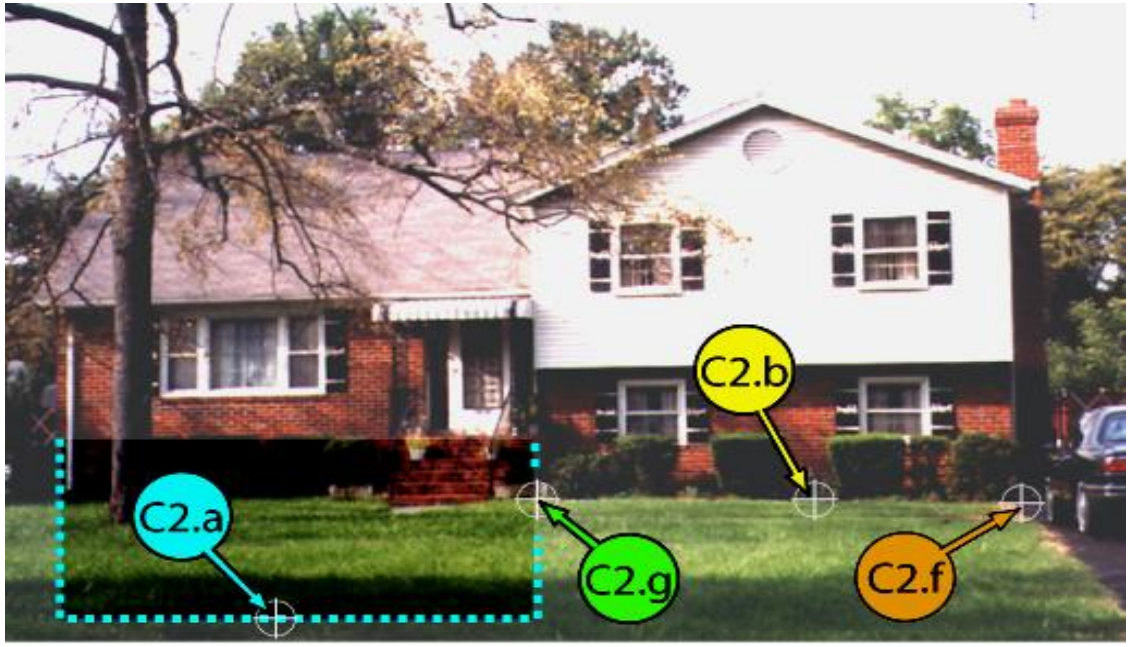
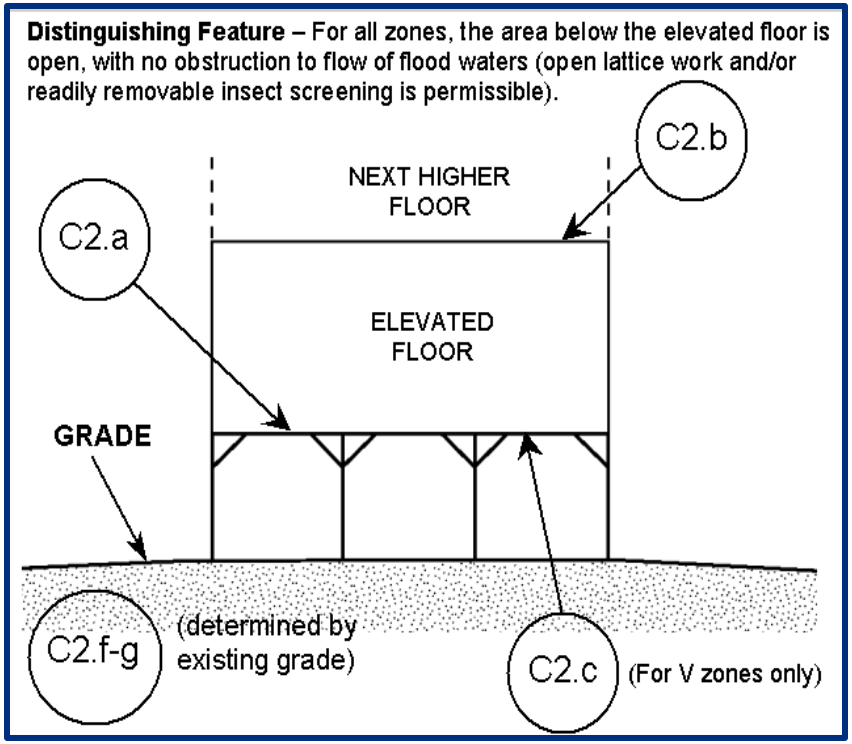
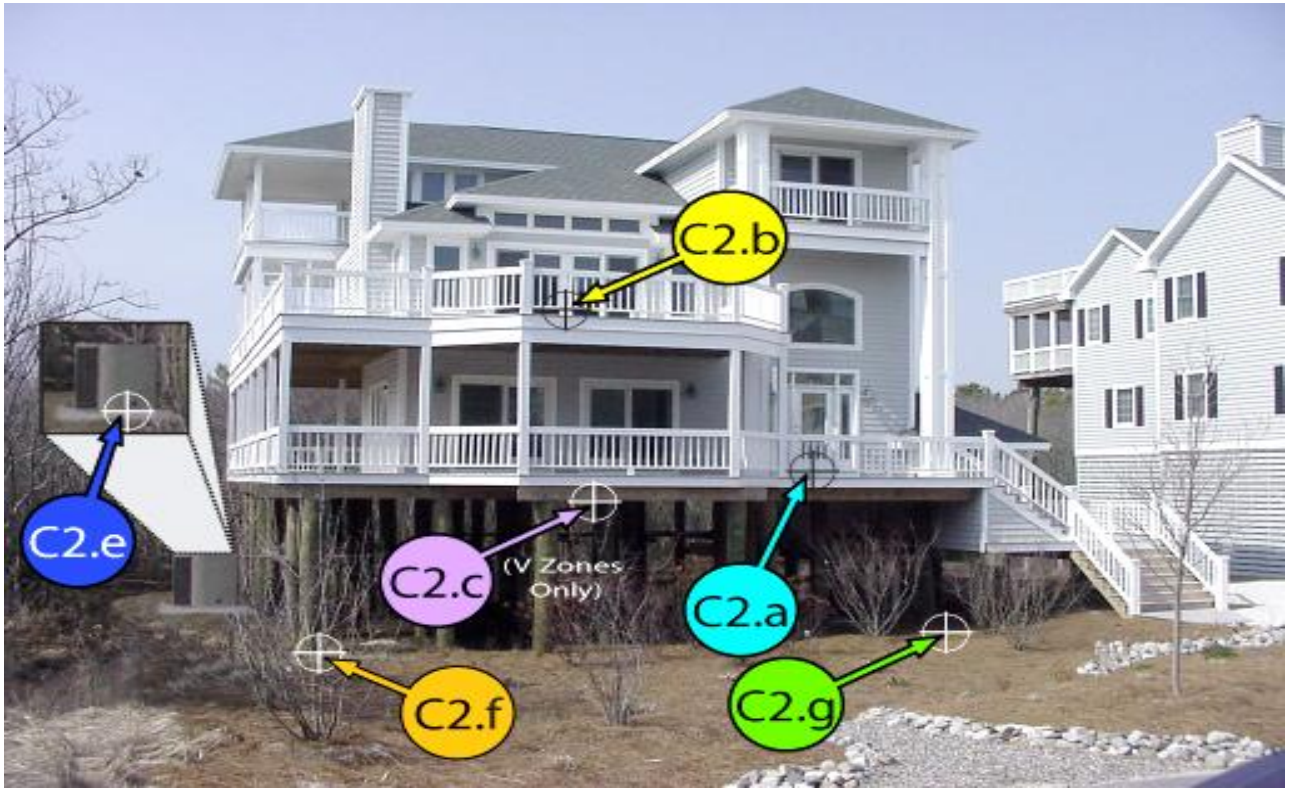


Diagram 5



- All buildings elevated on piers, posts, piles, columns, or parallel shear walls. No obstructions are below the elevated floor.

Multi-level building elevated on piers, posts, piles, columns, or shear walls (no obstructions below elevated floor)



Manufactured home elevated on pier foundation

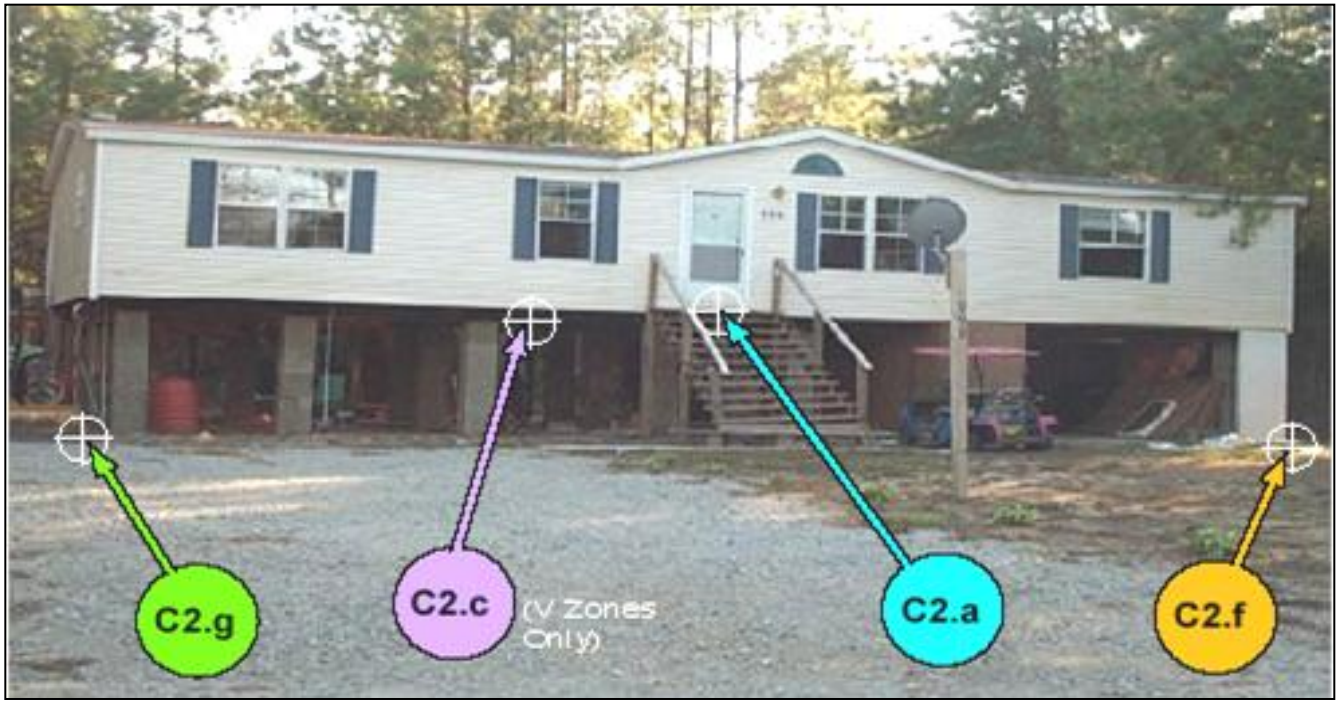
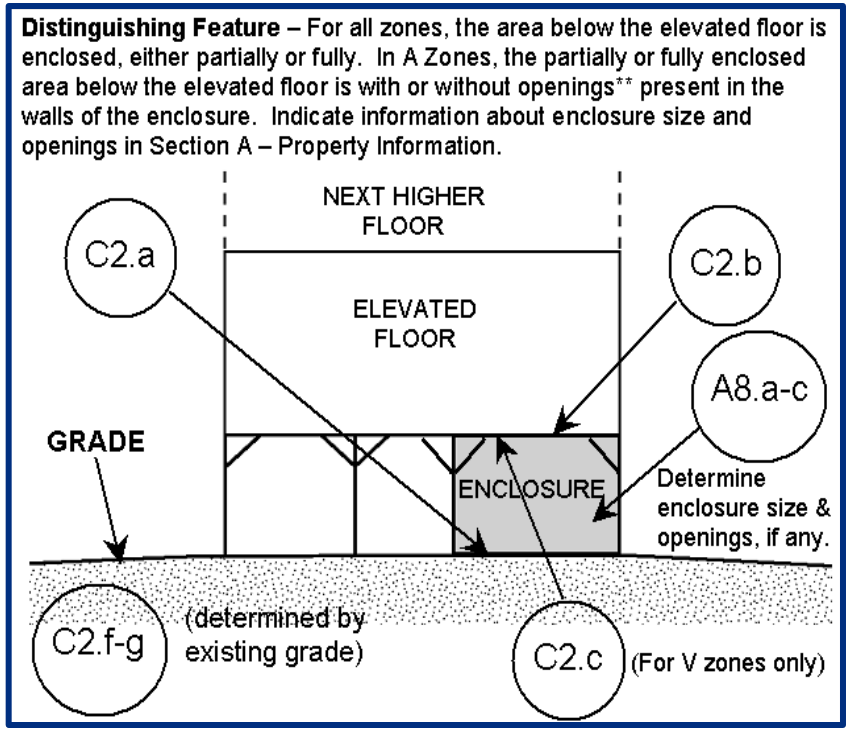
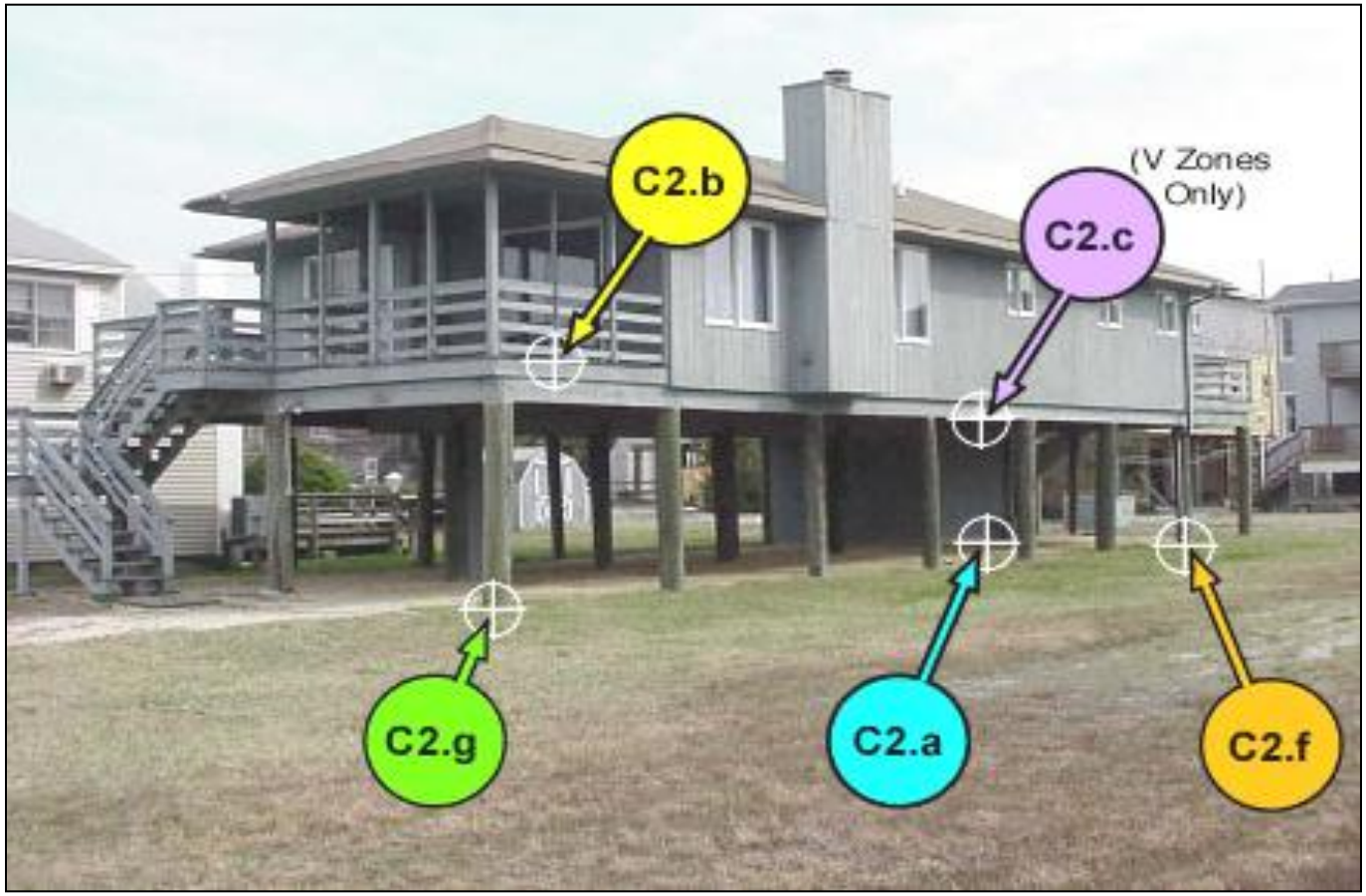


Diagram 6



- All buildings elevated on piers, posts, piles, columns, or parallel shear walls with full or partial enclosure below the elevated floor.
- Enclosure: that portion of an elevated building below the lowest elevated floor that is either partially or fully shut-in by rigid walls

Elevated Building with a partial enclosure



Elevated multi-level building with a partial enclosure

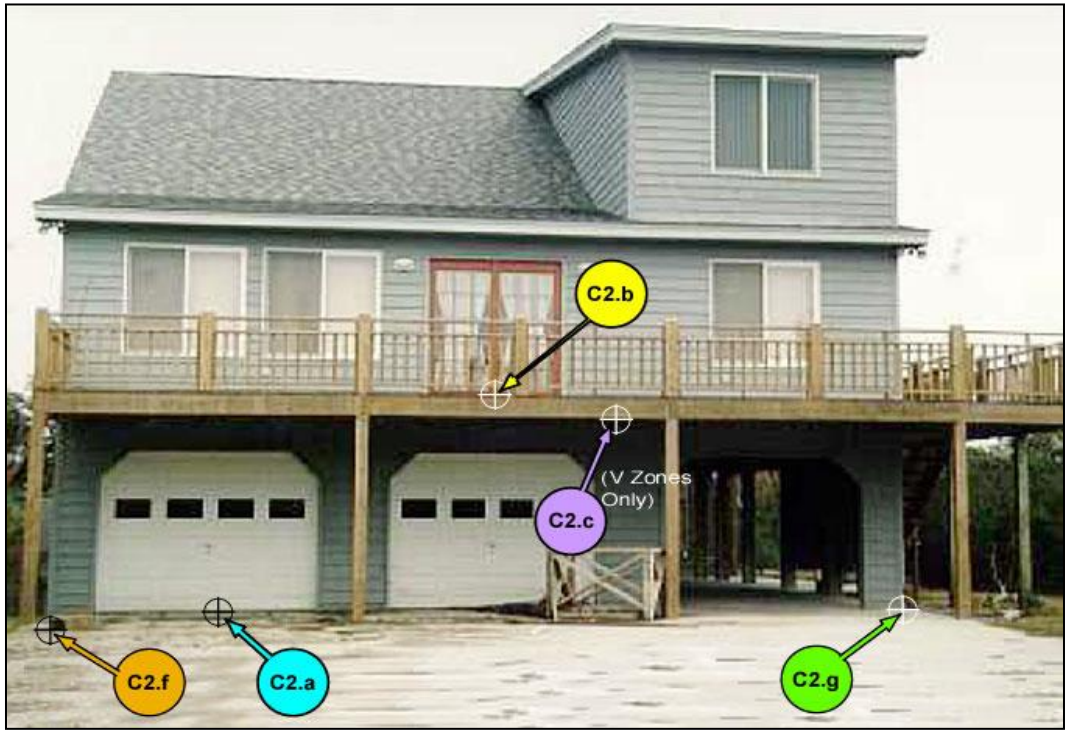
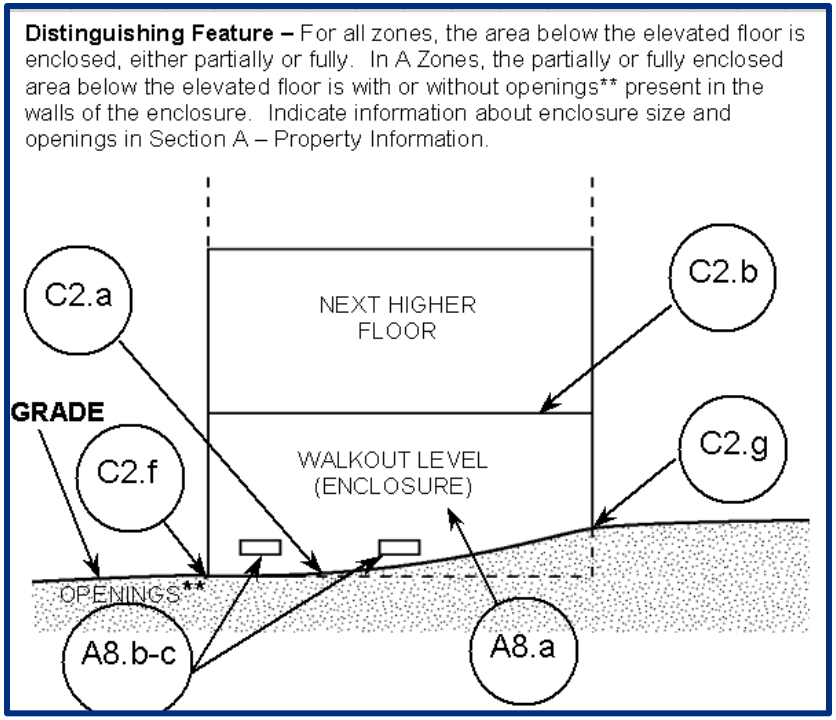


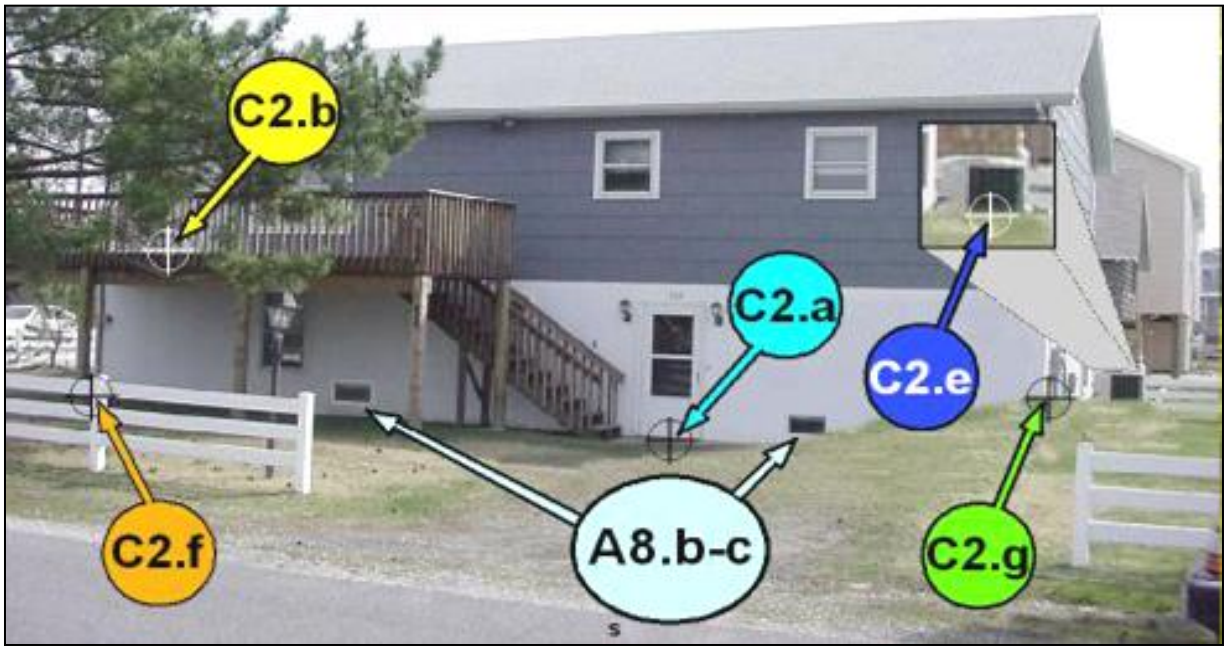
Diagram 7



- All buildings elevated on full-story foundation walls with a partially or fully enclosed area below the elevated floor. This includes walkout levels, where at least one side is at or above grade. The principal use of this building is located in the elevated floors of the building.

Building elevated on full-story foundation walls

Fully-enclosed area below the elevated floor



Building elevated on full-story foundation walls

Fully enclosed area below the elevated floor

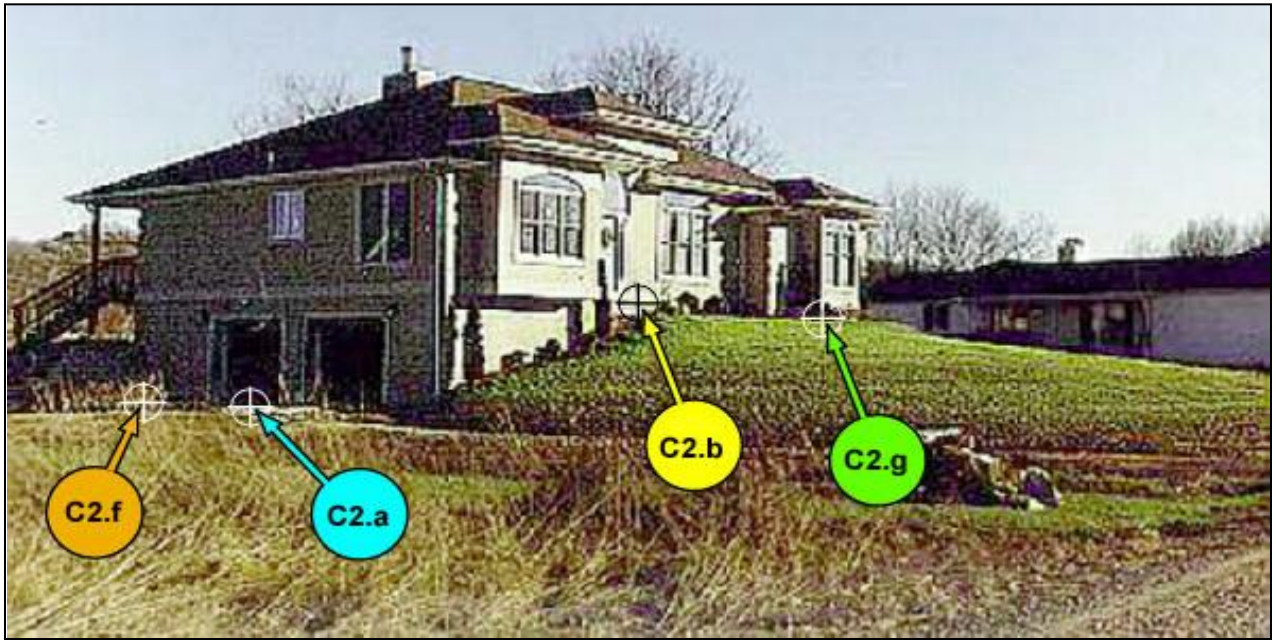
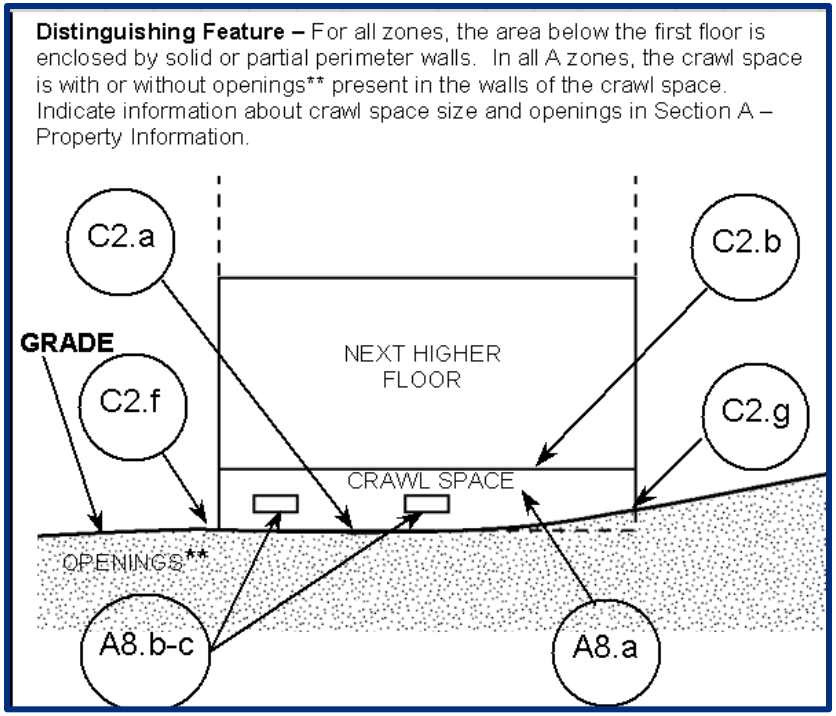
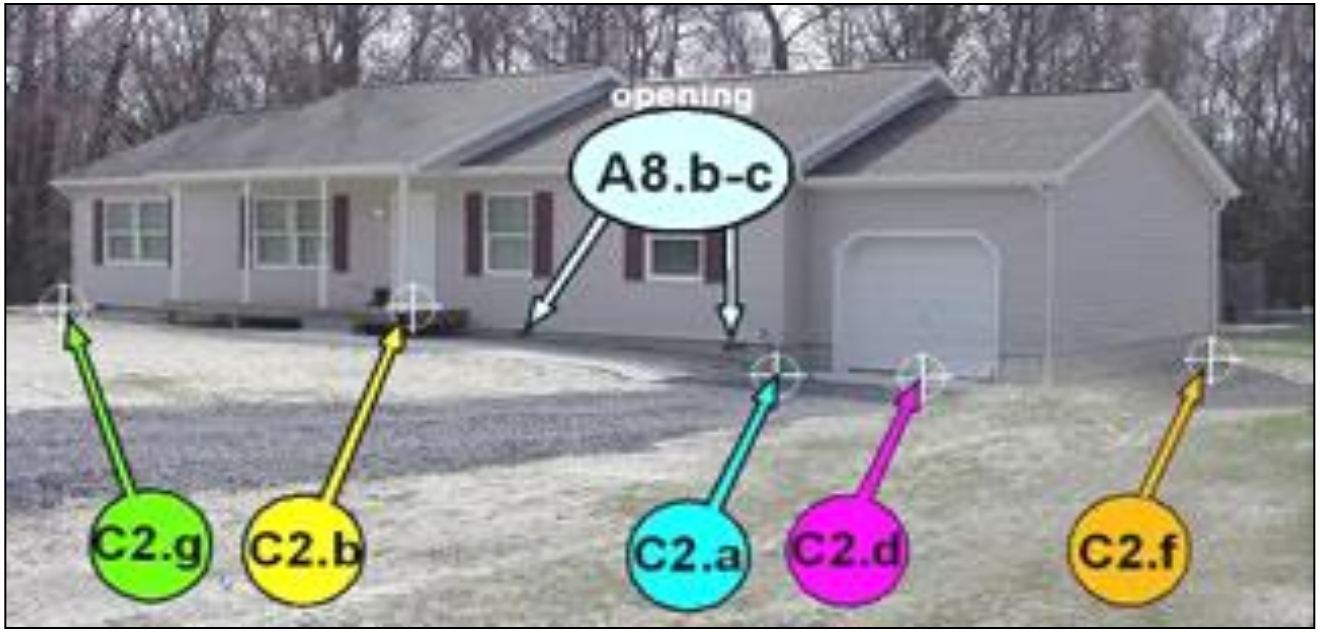


Diagram 8



- All buildings elevated on a crawl space with the floor of the crawl space at or above grade on at least one side, with or without an attached garage.

One-story building on crawl space with attached garage



Multi-level building elevated on crawl space

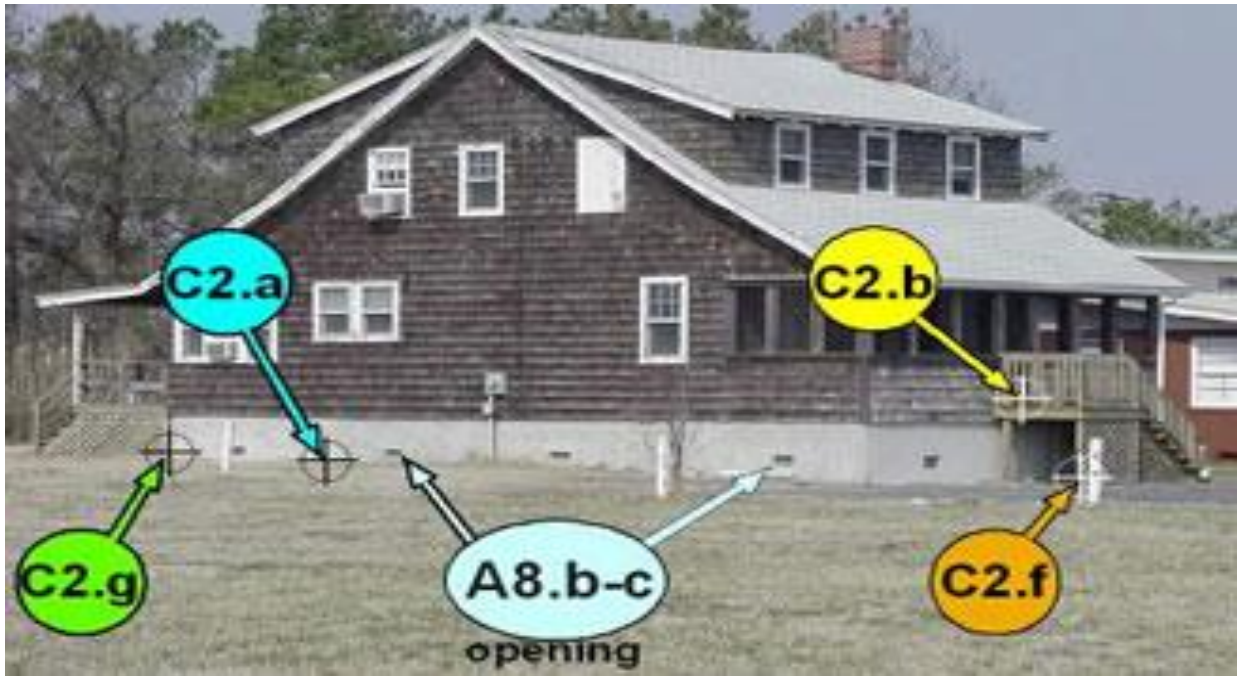
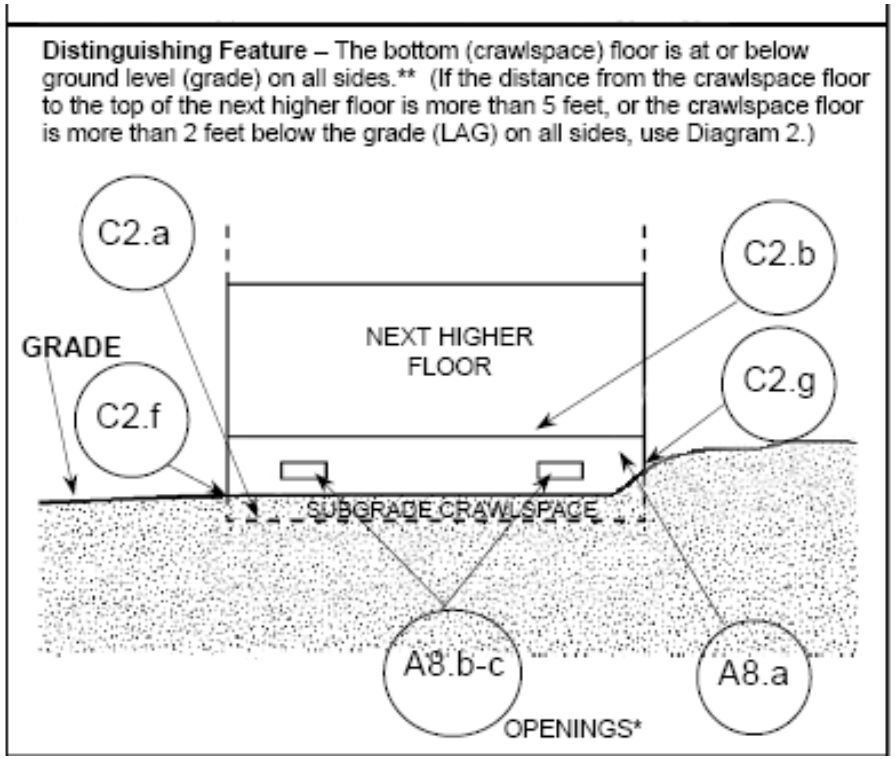


Diagram 9



- All buildings (other than split-level) elevated on a sub-grade crawlspace, with or without attached garage.

FEMA

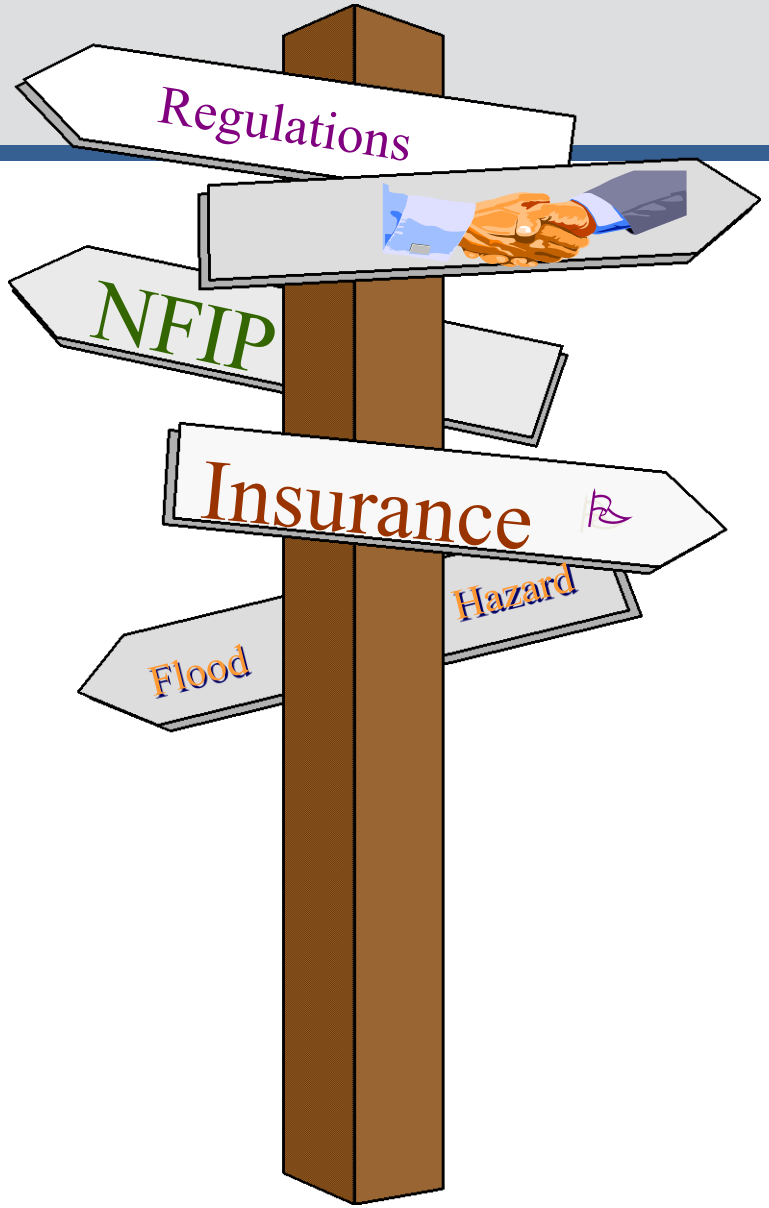
Diagram 9

FEMA

General Information

- www.fema.gov
- www.msc.fema.gov
- FEMA Publications
  - 1-800-480-2520 (Toll Free)
- FEMA FIRM/FIS , General Mapping and LOMC Questions
  - 1-877-FEMA-MAP (Toll Free) 877-336-2627
- Floodsmart
  - www.floodsmart.gov
  - 1-888-379-9531

Questions?



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